

MATHEWS INFO

WS 2004



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Dear Mathe-Info,

we understand that you might feel a bit uncared for—particularly since your editor in chief left for Canada without saying goodbye to you. Since the birth of your little brother, the “Mathebau Intern”, not a single one of your issues has been released. Maybe you even feel superfluous as he is always up to date and informs all the people inside the Mathebau regularly. We also understand you being jealous of your sister, the Mathe-OWO-Info. (She’s quite fat though, having 152 pages). Even the computer scientists love her, in fact they even elected her for “best OWO-Info of the university” in their magazine “Inforz” (which is nothing but another cheap copy of you!). Moreover, in spite of the “subjective choice” she even beat by far the computer scientists own OWO-Info and all others—with a grade of 1.8. Rumours say, that parts of her have already been cloned ...

But don’t worry, dear Mathe-Info. Nobody would ever clone you, but being cloned is probably not too healthy anyhow. And a few computer scientists cannot be a reason for being jealous of your sister. Well, you will never be as fast and up to date as your little brother. But you have much more space, much more substance and even a bit of humour—for short, you have all those things, which your two-page-long brother cannot afford. You are simply the best!

Of course it is quite a sad thing, that you currently do not have any editor in chief. But we are sure that somewhere out there is somebody only waiting to become the next one. Maybe he/she is just reading this lines.

Nice to have you.

Yours,

the editors

Christmas Calendar

The way will open ...

Well, the way through the door, to be exact. Through an orange door, somewhere in the maths building. One door a day, every day. Until Christmas. In case you hadn't heard: Christmas is coming nearer, and the maths building has been transformed into a giant Christmas Calendar again! Or, as we say in Germany, into an *Adventskalender*. Your *Adventskalender*.



Made with lots of sweat and finger
paint: the *Adventskalender*

Usually, the term *Adventskalender* describes a picture with little openings, i.e. doors, numbered from 1 to 24, each concealing some sort of surprise. (You've probably come across them in shops.) Starting on the first of December, the correct door is opened every day, until Christmas Eve. The same goes for the maths building. During the advent season, some of its orange doors are decorated with big, brightly colored posters with numbers on them. Every day you may search for the door with the correct number. If you open it, you'll see the surprise, consisting of a person behind the door and some sweets. The person will be very glad to see you, and will offer you some of the sweets. This is your opportunity to get to know one of the maths people a little better, and in a more relaxed atmosphere. (It is also the opportunity to take a short break and get something good to eat at the same time.)

Although there are many doors in the maths building, it's not too hard to find the right one. Simply start your search by reading the daily hint on the blackboard in the Fachschaft's room. We wish you lots of fun with the maths *Adventskalender*!

Your Adventskalender-Team

The next ...

Matheball

... will be on June, 17th. And to ensure that the ball will be at least as good as this year, the Ball-AG is looking for new members.

If you like dancing, organising or like to help us choose a band or a programme, just contact us! Tell us personally or send an email to ball-ag@mathebau.de. Or visit our website: <http://www.mathebau.de/matheball/>.

Carpe Dancem,

Your Ball-AG: Britta, Dieter, Peter, Jens, Jennifer and Sonja



Matheball 2003

OWO

Part 1: It started way back in April ... I was sitting in one of the computerrooms of the maths department in Dublin, reading my emails. One of them was sent by Frauke, who told me about news from Darmstadt and the maths department. I discovered the topic “Organisation of the Orientation week”, and just a second later, I noticed being almost late for my next lecture. Ok, I don’t want to bore you, as a result I decided to spend this long, examless summer with organising the next orientation week for the new first semester students.

Part 2: In June. After a short getting-used-to-life-in-Darmstadt-again phase, I began thinking about the task. My first thought: I am not going to do that alone! So I looked at my ICQ list and as it happened, Sven and Matthias were online! Matthias was even faster than me and totally out of the blue he asked if I still needed people for the organisation team. Well, get on board :) So there were two of us. I asked Sven, who joined in immediately and here it was: the most easily constituted OWO-organisation team in the history of orientation weeks with organisation teams!

Part 3: The barbecue party. At one of the typical barbecue partys in the legendary “TU-Hüttchen”, Sven and I started planning the OWO at around midnight. The result was a little yellow paper (apologies to the Ball-AG, it was a maths-ball-flyer), scribbled on with a pen and massively important. Little time later, there were OWO-tutor- and OWO-seminar-lists in front of 217, the OWO was a continuing topic on the Fachschafts meeting and in the life of the organisation team members.

Part 4: The OWO-seminar. A beautiful weekend at the end of June, 15 more or less industrious future OWO-tutors and the good old rectory-seminar-house in Dorndiel. All in all a very successful weekend. We distributed responsibilities, worked all night, found a motto, worked on the topics for the small group sessions, ate yummy things and sat on the grass playing guitar and singing. In my opinion, this seminar was extraordinarily (but pleasingly) productive. Still I had the feeling that most participants had a lot of fun there.

Part 5: The long summer. It is certainly not true at either of the orga-team members worked on the OWO day and night through this summer. But it also is not true, that I didn’t think about the OWO at least once a day. We were planning an OWO-Info, motivated our tutors, collected information and organised meetings from time to time. Apart from that, there were a couple of big tasks ahead of us, like keeping in touch with the professors, organising rooms and contact to other departments of the university. The commitment in projects like the OWO theatre play or the OWO-Info not to be forgotten.

Part 6: The training. A couple of weeks before the actual orientation week we organised a training weekend with the help of the HDA (the university’s didactical group). Two days were full of consultation, simulations, feedback and the formation of tutor-couples



First semester game

(this was not a pairing off—at least not explicitly—but more the who-will-be-co-tutor-with-whom). After this training weekend many of our OWO tutors had the feeling of being well-prepared for the orientation week.

Part 7: The OWO. Last but not least—the actual orientation week. For the orga team and a couple of committed OWO tutors (thanks to you again at this point) it already began on Sunday afternoon with packing tutor-bags, painting signs with the names of the small groups and last discussions. Then Monday morning at 7am, everyone showed up at the Fachschaft's room. Highly motivated, and dressed in the latest (OWO)-fashion, the last gathering of all tutors took place. While the OWO officially began for the Firsties, their tutors armed themselves with bags, posters, tea, string, and homemade cake to prepare for the first small group.

7a: Monday. 8am sharp, S1-01/053. Our President Wörner (thanks again!), our dean Prof. Hieber and the OWO-Orga welcomed the Firsties, who were then sent their separate ways. The Diplom students had a trial lecture with Prof. Herrmann, the MCS students a small talk by Werner Nickel. Then small groups, the *Nebenfachvorstellung*, and more small groups. Afterwards everyone went to the Karolinenplatz to take part in a pilot project, which consisted of all Firsties in our University forming the letters TUD. This spectacle was photographed from the top of the main building. When this was accomplished, our Firsties were sent home to get some rest, as OWOs tend to be exhausting.

... If you've come that far, you've come as far as the translator – sorry, if you want to read the whole article, you'll have to read it in German.

Lea

“Music expresses, what cannot be said and cannot be kept silent.”
Victor Hugo

The Math-Music-Evening

Maybe you have heard about it, maybe you are longing for the next, maybe you missed the last one. But however: This semester there will be a Math-Music-Evening again. It will take place on

January 27th in the Köhlersaal (S1-03/283).

We are still looking for people who wish to perform—whether your performance is classic, cabaret, instrumental or vocal, if you are performing alone or in an ensemble. Concerning this we count on you! If you would like to participate send an email to musikabend@mathebau.de. The last thing missing would be an enthusiastic audience—but I don't think we will face any problems here! You are cordially invited to enjoy this very special evening with us. (Any help with the organisation of the Math-Music-Evening is also welcome.) Finally, I would like to draw your attention to the mathchoir, which forms an important part of the Math-Music-Evening. The rehearsals of the choir take place every wednesday from 5 to 6.30pm. Everyone who enjoys singing is invited (we are still looking for some sopranos and altos in particular).

Cheers and I hope to see you at the Math-Music-Evening



Students' Colloquium

How does a typical lecture at our math department look like? At least if it is a lecture of the *Grundstudium*, then the usual situation is about 300 people sitting at 8 o'clock in the morning in a much too small and much too warm lecture hall with not much of oxygen left. Those 300 people then listen (more or less) to another human being—usually called professor—who for the 19th time in his life gives the very same lecture on linear algebra and is as enthusiastic about this as one can imagine ...

Wanna see something different? Then you should visit the students' colloquium (StuVo). This event is organized by the Fachschaft for the second time now and it takes place every two weeks. Interested students present their favorite mathematical topics—well, “mathematical” in a rather broad sense. The great advantage of these talks as compared to ordinary lectures is that the person in front is giving this talk for the first time—or at least not for the 19th time. Moreover, being students the speakers still remember that not everything is “clear” or “trivial”. Difficult proofs are visualized and the real meaning of theorems are clearly exhibited. The talks are usually centered about general ideas rather than techniques. Thus they explicitly address students from all semesters. In fact, this is reflected in the audience: Among the ca. 20 people attending the talks regularly there are students from the 2nd to the 11th semester.

The direction of the talks might be described as applied pure mathematics and they include a lot of non-standard and off-topic remarks. Not only for this reason there is a lot to laugh—every second Tuesday at 6 p.m. Watch out for the announcements on the blackboards and via mailinglists!

Henning Homfeld

DIFFERENT TAKES ON MICHAEL MOORE'S LATEST FILM.



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ICQ

He is full of energy and music. He is reliable but never ever boring and studies lots of subjects, mainly maths with a bit of physics thrown in for good measure. One might say he's full of diversity, dancing through life without thought for serious things. But lately he sometimes (well, all the time, really!) feels a bit unbalanced. Fact is, he seeks

her. Curious, openminded and full of vitality. A girl who knows where she stands and won't let anything upset her. Not necessarily just one girl, why not several? The more the merrier! It doesn't matter which subjects they study, as long as they're patient and don't feel stepped on all the time. Not much younger than 18 or older than 30, somewhere between 5ft and 6ft4 tall. And most importantly, they must be free to spend time with him.

Interested? Then why don't you visit him? Mondays at 6 pm is a good time, he's usually in room 204 in the old main building at that time. Any further questions? Well, why don't you send him an email (tanzkurs@mathebau.de) or visit his bigger brother's homepage (<http://www.mathebau.de/matheball>).

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Consequences of the lack of girls ...

New “Allgemeine Prüfungsbestimmungen”

Since the beginning of this semester our university has new *Allgemeine Prüfungsbestimmungen*. The *Allgemeine Prüfungsbestimmungen* regulate how exams are handled at our university, e.g. how often one can repeat an exam, when you have to register for exams etc. Some of the rules are specified further in departmental regulations. The new *Allgemeine Prüfungsbestimmungen* replace the former regulations for *Diplom*-, *Lehramt*- and *Magister* programs.

Some of the most important changes were published in the last *Mathebau-Intern*, but since it came to some misunderstandings due to false information of the departmental *Prüfungssekretariat*, (see according article in the German part) we summarize the changes in more detail in this article.

From now on there is no fixed timespan in which one has to pass his *Vordiplom*, *Diplom* or Bachelor exams anymore. Up to now one had to finish the last exam two years after finishing the first one at the very latest; this has been changed because swift studying is now guaranteed by the *Studienguthabengesetz*. Another difference concerning all math-resp. MCS students is that from now on all final theses have to be surveyed by two referees.

Two other changes concern only students of the bachelor program: The *Freischussregelung* allowed the students to fail an exam at first try if they were still in their respective *Regelstudienzeit* without any consequences, additionally one could resit up to one quarter of the first tries to pass an exam in order to improve the received grade. From now on this rule does not apply to all exams anymore but only to final exams. Since *Vordiplom*- and *Diplom*- exams count as final exams, but module exams in the Bachelor program do not, the rule won't apply for these exams anymore. The good thing is: Now up to a quarter of all exams may be failed twice and one still gets a third shot at them. Up to now this was only possible for one exam. This rule does not apply to *Vordiplom*- and *Diplom*- exams, since these exams consist of exactly four partial exams.

There are also some rules concerning the transition from the former exam regulations to the new ones: If one has already registered for a partial exam of his *Diplom*-, *Vordiplom*- or Bachelor exam, one can take the other partial exams of this exam according to the regulations of the old *Allgemeinen Prüfungsbestimmungen*. One then has to request this when registering for the next partial exam. In any other case the new *Allgemeine Prüfungsbestimmen* apply.

You can find the *Allgemeinen Prüfungsbestimmungen* on the net at http://www.tu-darmstadt.de/pvw/dez_ii/apb_endfassung.pdf

Sven

Master FAQs

What is "the master"?

Currently people in our maths department are planning a new programme of studies: the master in mathematics. The corresponding degree will be a M.Sc. (Master of Science). It is equivalent to the Diplom degree.

When does it officially start?

If everything works out as planned, students may enroll in the new programme in time for this coming wintersemester. It is planned that once the master programme exists, it is possible to start in winter as well as in summer (though winter is probably a better option).

Are there any consequences for me, studying for a Diplom degree?

Yes! You don't have to change programmes of study, don't worry. The course scheduling at our maths department will be altered, though. To comply with the terms set by the new master programme, the course scheduling in your *Hauptstudium* will have to be changed a bit here and there. On the one hand, this means that there'll be a clearer picture of which courses go together well. On the other hand, a course that up to now usually took place during the wintersemester may switch to summer, or the other way around.

Can I change from the Diplom programme to the master programme?

Sure. If you ...

- ... already passed your Vordiplom, did some Hauptstudium courses (and passed the exams) ...
- ... prefer the new structure to the old ...
- ... like being a guinea pig ...
- ... believe that you'll get a better job with a masters than with a Diplom degree ...

... then have a go at it. If the people responsible decide that your knowledge in mathematics is equivalent to that of a bachelor graduate, there shouldn't be any serious problems.

Why will there be a master anyway?

For three years we've had the MCS bachelor programme, but no master to follow it. This problem was not dealt with for some years, until suddenly it was high time something happened and an MCS-mastercommittee was constituted. (After all, some of the current MCS bachelor students will have their degree by the end of next semester.) But what would an MCS master programme look like? In principle it would look like any other master programme, but with the minor subject Computer Science. As it

made more sense to create a master programme with different possibilities regarding the student's minor subject, that's what was decided should happen. In Germany many Diplom programmes will switch to bachelor / master sooner or later. Our university president is strongly in favour of this, too. And so without really thinking it all out, the MCS-mastercommittee became a general mastercommittee.

What are the major differences to the Diplom?

The master programme will take you four semesters to complete (or rather, ought to do so ;-). To enroll, you need to have a Darmstadt bachelor's degree in maths, or something equivalent. The programme is build on the module principle, like the MCS bachelor. Instead of having four very large Diplom exams, there are two big, as well as many little, module exams. The two bigger modules take two semesters, and give you the opportunity to specialise in two mathematical areas. The smaller ones have the size of one course, and come in different flavours: minor subject modules, maths modules, general studies modules. And, of course, the master thesis, which should take about six months to complete.

Who gets to decide what the new programme will look like?

It's not one decision, but several. Currently the master programme is being designed by the master committee. This committee has seven members, three of which are students: Susanne, Sven and I. The committee decides on the structure of the programme, and writes the *Studienordnung* as well as the *Ausführungsbestimmungen* to extend the university's *Allgemeine Prüfungsbestimmungen*. After they've finished, the *Studienausschuss* will have a final look, and then the *Fachbereichsrat* has to pass the new regulations. Then the committees at university level get a look, first the *Unterausschuss Lehre* of the senate, then the senate. After all this has been accomplished, it will hopefully be accredited by the ASIIN, an independent commission. Only then may students enroll in the programme.

Where can I find out more about the master programme?

Ask us about it! Sven, Susanne and I are your representatives in the master committee. We're happy to answer all your questions regarding the master programme, and would like to know your thoughts on the subject. Simply ask us when you run into us! Usually you'll find at least one of us in an ε -neighbourhood of the Fachschaft's room 219. If you can't find us, try the Fachschaft's meeting, (every Tuesday at 6pm). Of course you can also reach us via email: susanne@mathebau.de, sven@mathebau.de, frauke@mathebau.de.

There are also some useful (but German) Mathe-Info articles with background information about master programmes in general, and this programme in particular. One of them by Sven, to be found in this issue of the Mathe-Info on page 15, the other one in the February issue of the Mathe-Info.

Frauke

How to die inside the Mathebau

Even though this article may sound funny to you, it is basically about a very serious topic.

Did you ever think about the following scenario: You are sitting in 217 (or any other public learning room) thinking about some integral, and suddenly the integral falls out of your hand, cuts into your leg and wounds you lethally. What would you do? You might simply give up saying “OK, my life had to end like this, I am not meant to become a mathematician”. But perhaps you are one of those people who prefer to keep their life even in critical situations. Then you might remember your OWO tutor telling you “If you have a problem, go to the Fachschaftsraum”. So you use your last remaining power to reach the Fachschaftsraum, where you finally collapse. If this had happened some weeks ago, people might only have replied something like: “What are you doing? Your blood will ruin the carpet, die somewhere else!” This would not have been out of bad will, but simply because the Fachschaft had no idea what to do in such a situation. When the Fachschaft recognized this problem, I was asked to look for a solution. The only hint I had was the following rumour: “Somewhere inside the Mathebau, there is an ambulance room”. Fearlessly I began my search, always moving most carefully, so that I would not hurt myself at a dangerous integral. Finally I found out that there really is an ambulance room inside the Mathebau—and for probably good reasons it is locked. So I went to our helpful caretakers to discuss our emergency scenario with them. Both of them completely understood the danger of the situation and tried to help me. Hence they searched for the key in a large keyboard and then in yet another one—without success. Only their universal key would open the door, but of course they could not give me a copy of that one. So they came to the result that there was no hope for injured people in their absence. They promised to look for a solution for this problem. The idea was to order new keys for the lock of the ambulance room. The only problem: Because of the necessary procedures at our university this would take at least six weeks. So they asked me to make sure that nobody (in particular not you) would hurt themselves within the next six weeks—after all, nobody had hurt themselves during the last few years. So we began to design “Do not hurt yourself” signs—because “New ambulance room keys delivered late—math student died” is simply a bad headline.

Fortunately two Fachschaft people finally managed to open the door of the ambulance room in a very unexpected way. Their revolutionary idea: They simply tried the key of the front door—and it worked. So everyone who can let people into the Mathebau can also help those people in case of emergency. That’s good—just to bad that no one knew!

So much about the theory—now comes the practical part: Do you want to join my expedition into the ambulance room? Then follow me! We open the front door of the Mathebau secretly and enter the hall, but where to go now? Well, let’s first go straight ahead, there is the announcement of the next colloquium—sounds quite interesting—but let’s continue our mission: We turn left and find our way to the glass door. Right in

front of it we turn left again—and there it is: The mighty ambulance room! Awestruck we open the door. Our curiosity increases to infinity and so we overcome our fear and we enter a room which no student has entered for generations.

When we open the door we are surprised—somebody must have been here before us! The room is indeed very tidy and there are a lot of papers explaining how to help injured people, whom to call in case of emergency etc. Also the medicine seems to be quite new—as we conclude from the big box with the old medicine in front of us. But a closer look onto one of the packages reveals the bitter truth: “Do not use after 31.12.1999”.

Oops. But now we know more: The good news is that apparently there have not been any emergencies inside the Mathebau for at least five years. The bad news is that for at least five years nobody cared. Well, fortunately now everything is different. But don't forget the following:

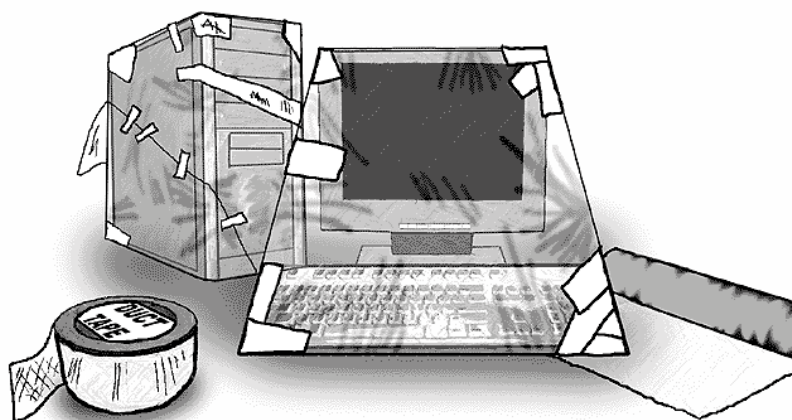
SECURITY WARNING

The ambulance room (S2/15-04) is located in the ground floor on the left hand side of the staircases. It can be opened with the same key as the front door. Inside you can find a first aid kit and internal and external emergency numbers.

Don't forget!

ALX

**DUE TO MAJOR SECURITY PROBLEMS WITH
MICROSOFT'S INTERNET EXPLORER,
THE U.S. DEPARTMENT OF HOMELAND SECURITY
RECOMMENDS TAKING STEPS TO PROTECT YOURSELF**



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Data protection

Do you happen to know the tiny book, titled “*Geheimschriften*”? It is a book about cryptography. When I was a little child I loved to read about how to encrypt texts. The methods were very simple, e.g. take the character that is the right neighbour on a keyboard, use the character in the alphabet following the one you need or use numbers instead of characters ...

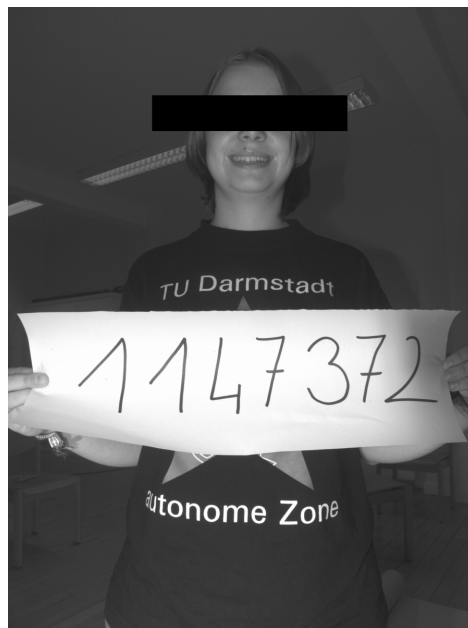
Later we thought up strange signs for every character and wrote them down in a table. Thus we were able to write nice little messages in class and the other people sitting between us could not read them. This works fine as long as the other people are not interested in the letters or not clever enough to decode them, as was the case in my school time.

But sometimes it is different. Do you know about the Enigma? It was a machine that the Germans used during World War II. They encoded and decoded their messages with the Enigma.

During a war it is not a good idea to have your enemy read your messages, if they are about how to attack the enemy. If he does, he is prepared for all the attacks. And as the Germans did not like this, they developed the Enigma. It was to be very safe and therefore everything was encrypted several times and the keys were changed very often. But the enemy was clever, too. They dropped bombs near the German submarines and hence when the Germans reported this, they got the encrypted message while also having quite a good idea about the plaintext of this message. By doing this several times they got to know a lot about how the Enigma worked and were able to read the messages. Bad thing for the German *Wehrmacht*.

Today there are better encryption algorithms and you cannot get the encryption key from enough data in plaintext and encrypted form. How is this done? You generate a public key and a private key that corresponds to this public key. Then you give your public key to everyone who should send you encrypted messages. These people can write a nice message, encrypt it with your public key and send it to you. Only with your private key are you able to decrypt and happily read the original message, create an answer and encrypt it with the public key of the other person ... But as things develop it may only be a question of time until this is not safe any longer.

But why do I tell you all this stuff? My youth passed long ago, and World War II is even longer gone. And someone will do something that your online banking is secure,



Mrs. Anonymous?

too. At the TU only the FB 20 offers cryptography, and we don't like them anyway. So where is the problem? It is the fact that there is an enemy at our department and I want to warn you now:

When you enrolled at the TU, your name was encrypted. You got your *Matrikelnummer* and you were asked to keep it secret from others. Only the university and you know which number belongs to your name. If the university wants to inform you about your marks, it sends you an encrypted message. You find your *Matrikelnummer* on a list together with the mark. Therefore no one else is able to see how good or bad you are (And you are glad that the others do not know this).

But in the math department, there are some "bomb droppers", too. They try to decrypt those lists. And it is very easy. If I told you that the allies in World War II gave out lists, in which the Germans were to fill in their encryption code, you would laugh at me. No one is so naive. But the bitter truth is this: In the math building someone sets out a list. Then a crowd of students fight for the right to put their encryption code on the list first. These lists are disguised as "exercise lists", "tutorium lists", "proseminar lists" etc.

But the question is, why should anyone write their name and *Matrikelnummer* on such a list? A encryption makes no sense if those, whom it should protect rejects this protection.

Thus your exam results of the exams may be found out by any student, who was clever enough to take photos of all exercise lists at the beginning of semester. But there are not only clever students. Anyone at all may enter the math building to get this information. You say marks of your Vordiplom do not matter? Well, someone from the company you want to work for knows that you got a 4 in the Ana I. No, with such bad marks, they cannot employ you. And you could think of even worse cases.

Mister Weitz, a member of staff of the hessian data protection officer, wrote us:

"Displaying lists with personal data by the university administration, for example on the noticeboard, has always been problematic from the point of view of a data protectionist, since by this procedure data is made public (§16 HDSG). I have always tolerated lists displaying grades in which only the *Matrikelnummer* references a person. If the name is displayed as well this is not legal. The same should hold for lists concerning divisioning of students into groups".

So you see, even people who take care of data protection tell you that *Matrikelnummer* and name should not go together on public lists. If your professor needs your name and *Matrikelnummer*, he can get them through a list deposited at his secretary's office, or by letting his students fill in a list during the first lecture. It should also be possible to pass around a list during exercise sessions, where there is enough supervision, too.

And the moral of the story: *Matrikelnummern* should be made unreadable.

Andrea

People inside the Mathebau, Volume 1

In this series we will introduce people from the *Mathebau* to you. This issue proudly presents the new students' advisor, Markus Helmerich:

Mathe-Info: *Hello, would you kindly introduce yourself to our readers?*

M.H.: Yes, of course. My name is Markus Helmerich, I am 31 years old. I have studied mathematics and completed both my diploma and my teacher's degree here in Darmstadt. My second subject there was geography. I finished in 2002. During the last two and a half years I have worked as a students' advisor for the *Zentrale Studienberatung* at Frankfurt University. Since that time I have also been working for my PhD here in Darmstadt. My supervisor is Prof. Wille from AG 1. Since December I have been working here in Darmstadt as the new students' advisor.

Where can students find you?

Currently my room is the same as that of my predecessor, Franziska Siebel, that is room 424.

What are your tasks as a students' advisor here in Darmstadt?

First of all I inform and advise students and people, who are interested to become students. Moreover I run training programmes for the tutors for the exercise groups, where they can develop their didactic skills.

How can one become students' advisor in Darmstadt?

Well, basically you have to apply. The question is of course, why should people choose you for this job, what qualifies you? In my case I could report, that I had already over two years of working experience. Moreover, I have already helped to advise other students when I was a student myself, e.g. I helped to organize information days and to run training programmes for tutors. Thus I had already a lot of experience in advance.

Why is your job interesting?

In fact I have a lot of different jobs to do, and I can really improve things here at the math department or at the university, at least a bit. I find it important that there is a good atmosphere at our department, and I like to help with that. Of course I also like to help people, in particular students, with their questions and problems.

What are your plans for your first semester as students' advisor here at the department?

Currently we have to organize the HoBit (information days on university and job market). We also have to discuss with other departments about the courses for the *Wahlpflichtbereich*. Finally I want to participate in current discussion at the department, e.g. about the future of the *Proseminars* and the new master programme. However, my two main tasks are still the preparation of information programmes and the training programmes for tutors.

How do you want to reach the students?

It is most important to inform students at an early stage of their studies about my work and what I can do for them. For this purpose it is necessary to be present during the orientation programmes and to inform people, what kind of questions I can answer.

But I also hope, that I can cooperate with the *Fachschaft*. In fact, the people from the *Fachschaft* can help students with many problems which they have to face. In case they cannot help, they will hopefully send the students to me. I am already looking forward to the christmas calendar where I can meet a lot of students personally and vice versa. And I can only encourage all students, to come to me, if they have any problems: Everyone who has a question should not hesitate to come!

What do you like about the people which come to your office?

My work is much easier and I can help much more, if the students are prepared and have some precise questions.

And what do you dislike?

Sometimes students have wrong expectations about what I can offer to them. I can only give hints, showing different ways and perspectives, but I cannot decide for them. Students have to make their own decisions. And in some cases I can only send a student to another person.

Three characteristics of a good students' advisor?

Being able to communicate, to be tolerant and competent.

And what are characteristics which disqualify people to become students' advisor?

Being impatient, to be easily frustrated or uninformed.

What about the time, when you are neither writing your PhD thesis nor advising students?

If I have some time left, then my greatest hobby is sports. I try to do something every day, e.g. I like running, but also things like going to the gym, cycling, trekking, mountain climbing or swimming. I also try to read some things, which are not about my job like daily newspapers and short stories. Since some time I have started to read poetry as well. I also like to cook meals with several dishes for many people.

And now some really tricky questions: First of all: Coffe or tea?

Tea, preferably herbal tea, "vegetable tea" ... My stomach cannot bear to much of coffee and black tea is also not so healthy for me.

What's you favourite foom inside the Mathebau?

I think, that's still the *Fachschaftsraum*.

What's the most ugly place in the Mathebau?

Well, the *Mathebau* is beautiful, isn't it. Oh yes, really, I like those orange doors! OK, the inner "K" rooms are a problem.

Living in Darmstadt or driving home at the weekend?

I will move back to Darmstadt or more precisely Kranichstein in January.

The most beautiful place in Darmstadt?

The *Mathildenhöhe*.

The best pubs in Darmstadt?

In summer I would definitely say the *Weststadt Café*. In winter, let's say *Café Chaos*. But the best pasta you get at *Taverna Romana*, if a bit of commercial is allowed.

Darmstadt is the most beautiful town of the world, because ...?

... it's just perfectly situated. On the one hand it is at the very heart of the Rhein-Main area, but on the other hand nature starts just at the back door: We have the Odenwald, Taunus, Bergstraße ... And of course the mild climate.

Living in the Mathebau is great, ...

... because there is so much of life here. People just like to stay here, even if they don't have to study.

Buying christmas presents or producing you own ones?

Both.

Have you been at the Weihnachtsmarkt?

Well, I went by. But generally I don't like these *Weihnachtsmärkte*.

What are your christmas wishes to the department?

I wish, that life at our department remains as active as it is. And I hope for a good communication between all the people at the *Mathebau*. Finally I wish, that we manage to preserve or even improve the quality of our studies during all the restructurings we have to face in the context of the new Bachelor-Master programme.

Your new year's resolutions for your work at the department?

I hope, that I will be able to participate in many departmental committees, and also in some university committees. Furthermore I would like to get in touch with the *Fachschaft*. And finally: Don't panic!

And finally: Your motto?

Everything's gonna be alright.

If you have any questions for Markus Helmerich you can contact him as follows:

Phone: 16-3787

E-Mail: studienberatung@mathematik.tu-darmstadt.de

Room 424

Office hours: Tue + Thu 10.30 - 12.00 and by appointment

Interview: Tobias Hartig

And that's the way you can reach the *Fachschaft*:

Fachschaft Mathematik

Schloßgartenstraße 7

64289 Darmstadt

Phone: 06151-16-3701, 16-4515

Mail: fachschaft@mathematik.tu-darmstadt.de

WWW: <http://www.mathebau.de/>

Forum: <http://forum.mathebau.de>

- **Fachschaftsroom:** S2-15/219; always open for everyone
- **Fachschaftsoffice:** S2-15/220
- **Fachschaftsmeetings:** Every Tuesday at 6.15 p.m. at the *Fachschaft* room. Current minutes and other information inside the glass case right next to the *Fachschaft* office and at the pin board in the foyer of the *Mathebau*.
- **Fachschaftsrat** (*Fachschaft* council): Moritz Briedermann, Sven Herrmann, Robert Niebuhr, Lea Poeplau (aktive *Fachschaft*), Andrea Peter (radikale *Fachschaft*)
- **Student members of the Fachbereichsrat** (Departmental council): Frauke Harach, Sven Herrmann, Max Horn, Nicole Nowak, Andrea Peter

TYPICAL AOL USER
BEFORE THE 92 MILLION
AOL EMAIL ADDRESSES
WERE STOLEN AND SOLD.



TYPICAL AOL USER
AFTER THE 92 MILLION
AOL EMAIL ADDRESSES
WERE STOLEN AND SOLD.



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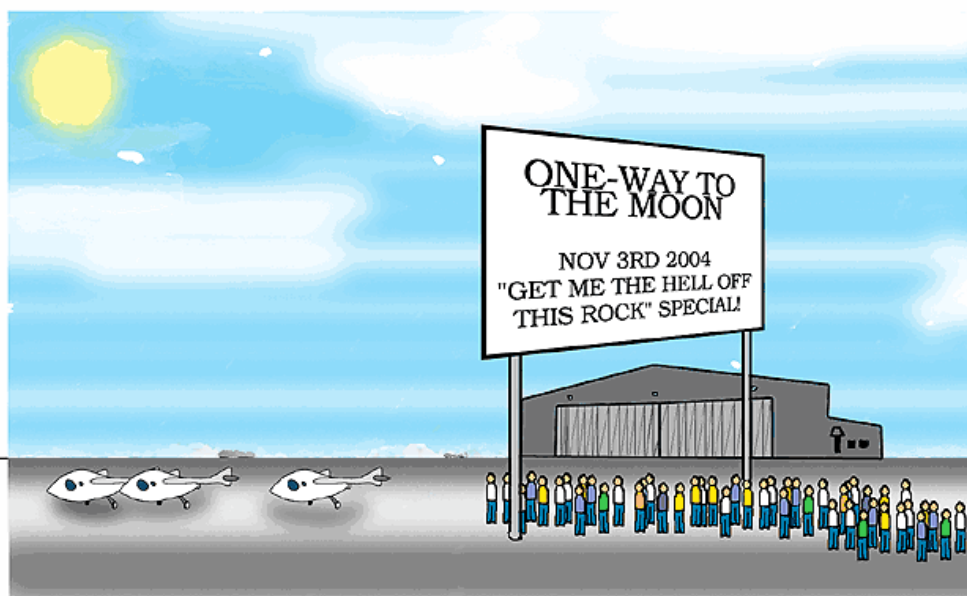
Studying math at the TUD

For me, as an exchange student from the University Illinois Urbana-Champaign, studying math at a German university is quite different from studying in the US. I have been attending calculus classes for four semesters at my university, but these were rather applied. I have not attended any algebra classes since my third year of high school. Moreover, I know only those parts of analysis touched upon in my calculus classes.

In fact, I am actually studying mechanics, but here I mostly attend math courses which I need for my degree. These are: Ordinary Differential Equations, Linear Algebra I and maybe Complex Analysis. They are on a more theoretical and abstract level than the courses in the US. Thus I have some problems with the abstract stuff like viewing functions as sets etc. Additionally, I find it hard to spend so much time on few exercises. Fortunately, the mathematical symbols and expressions are very similar to the English ones, so it is not hard for me to follow my lectures. All the people are very nice and it is not hard to find helpful colleagues. I still have some trouble with the language, so I am lucky that I am able to follow my courses thanks to the universal language of math.

John Kolinski

**THERE'S A REASON WHY COMMERCIAL
SPACEFLIGHT HAS BEEN GIVEN SUCH A PUSH LATELY...**



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Party in Darmstadt ...

... or how to learn, make money and have fun with the Erasmus programme of the European Union.

Each September about 140 foreign exchange students visit our university, most of them via the exchange programme of the European Union—Erasmus. Those poor students do not yet know our beautiful Darmstadt and their knowledge of German varies from “Welcher ist dein Lieblingsphilosoph?” to “I like Deutschland”. Of course, somebody has to introduce all those students into the secrets of living and studying in Darmstadt. Who else but the students themselves could be predestined for that job? If you have been abroad with Erasmus yourself, then you can go to Mrs. Astheimer at our Erasmus office and become Erasmus tutor. If you do so, then you will spend your next two weeks teaching a group of about ten people (in my case from Spain, Italy, China, Brazil, France and Portugal) about German language and culture. A weekend and vodka trip to the beautiful Rhine and a trip to Heidelberg are inclusive—and you even get paid for.

The students I met in my course were almost all exceptionally open, intelligent and nice. And of course a lot of intercultural misunderstandings take place:

- French girl to Russian boy (after one glass of beer): “Hey, you are drunk! (laughter)” Russian boy (in Russian): “Who is that! XXXXX (intranslatable Russian word)” ...
- Question to small Chinese girl: “What’s your father’s job?” Chinese girl: “He is responsible for the people in his company.” “Is it a big company? How many employees?” “Twenty millions.” “Pardon?” “Twenty millions.”

And so on and so forth ... Finally let me remark, that smoking is unhealthy and that everybody should spend at least one semester abroad during their studies. No matter where, no matter how, whether Erasmus or Fritz. Life is short, the world is large, the relation is thus epsilon—so at least don’t miss that epsilon! Thanks to good old Erasmus and all the people here in Darmstadt and all over Europe working in his spirit!

Roman Knöll

Ich liebe Schweden!

Just nu, på en molnig, regnig morgn, där jag tittar ut över floden Rhein till gamla burgruiner är mina tankar i Sverige. Fastän där har jag inte sett några burgar, inte ens lärat känna landet och folk, har jag ändå haft två underbara dagar i Lund, där jag tog del i Northwestern Europe Programming Contest vid Tekniska Högskolan.

Men låt mig börja med början: vid slutet av sista terminen tog, som i de senaste åren, en tävling i programmering i det nya Piloty-Huset plats. Det vill säga: lag av tre personer har 5 timmar för att lösa ungefär 8 problem. Varje lag får använda en dator och uppgifterna är ställt på engelska. Men det är inte så att bara 'hacker' och programmerings'freaks' kan lösa problemen, utan man måste använda huvudet. Typiska problem finns inom grafteori, optimeringen och geometri, men de är packade i 'real world problems'. Som alltid fanns det också i år några matematikstudenter som faktiskt var mycket framgångsrika (på de två första platserna fanns fyra matematiker). De två bästa lag får sedan resa till Northwestern Europe Programming Contest, som i år tog plats i Lund i södra Sverige. Tävligen där fungerar som den i Darmstadt, men nu är lag från hela norra Europa med, från Nederländerna, Sverige, Danmark, Norge och Tyskland. Problemen där är inte hårdare än i Darmstadt (men det kan också beror på att de i Darmstadt är ganska svårt), och dessutom hade vi tränat innan vi åkte till Lund: varje lördag under föreläsningfria perioden hade vi träffats under 5 timmar och hade lärt oss att analysera problem.

I mitten av November var det äntligen dags för nio personer (två lag och tre tränare) att åka till Sverige. Vi stannade i vandrahemmet i Lund, ett gammalt tåg. Första dagen var packad med förberedningen till tävligen, så att vi hinnade inte att titta runt i vackra Lund - med undantag av det nattliga hemväget till vandrahemmet.

På söndag var det dags för tävligen: 42 lag, de flesta från Skandinavien, men också sju tyska lag fick en luftballong i enskilda färg varje gång de hade löst ett uppgift. Första och andra plats i tävligen vannade ett svenskt och ett norkt lag, de får inom kort åka till Shanghai. Lagen från Darmstadt var inte dåligt heller, de blev femte och elvte.

Tyvärr vad det efter tävligen redan kväll igen, så att vi slutligen inte såg mycket av Sverige. Vi lyckade inte att verifiziera om ren har knä eller inte, men vi var fascinerade av elefanterna som fanns vid varje hörn. Sverige är helt enkelt ett vackert land :)

Det var i alla fall kul att delta i tävligen och jag kan bara rekommendera alla att delta i tävligen i Darmstadt nästa år. Om ni skulle vinna har ni chansen att åka till Sverige, till Stockholm om ett år.

Henning Sudbrock

Christmas quiz

Now and only here on special demand: The Mathe-Info christmas quiz! The quiz is divided into two parts, one mathematical part and one concerning the Mathe-Info itself.

Question 1: Answer the following mathematical question: Given a subset M of the real numbers we can create new sets by applying the following two operations to M in all possible orders:

- Taking the complement—The new set is the set of all real numbers not lying in M .
- Taking the closure—Add all its boundary points to M .

How many different sets can you at most produce that way from a given set M ?

Question 2: Read the editorial (“Dear Mathe-Info ...”) and find the n -th word, where n is the answer to question 1. This word is the solution of our christmas quiz.

If you have found the solution, then mail it to matheinfo@mathebau.de. Don’t forget to include your name and the subject “Christmas Quiz”. You can win several exquisite prices, e.g. the limited KoMa card game.

(In case you don’t know: “KoMa” is the name of a conference, where math students’ from all German-speaking universities meet to discuss *Fachschaff* related issues. This conference has released a card game, where the heads of the kings, queens and boys have been replaced by those of famous mathematicians. Moreover, the cards are designed in a “mathematical” way. You can win it in this quiz—or buy it from the Fachschaff for 2 €.)

THE FOUNDER OF IKEA SURPASSES THE WEALTH OF
BILL GATES, GIVING BILL CATALOG-STYLE NIGHTMARES



BILLY chair

\$47 billion

Still incredibly wealthy
but probably annoyed.

Christmas Wishes

The Fachschaft did a survey and asked maths students for their Christmas wishes. Here are their answers:

I wish for ...

- ✱ ... *more open working rooms for students, 'cause my students and I always have to stand during my office hour.*
- ✱ ... *a bigger coat rack for the Fachschaft's room.*
- ✱ ... *working printers!*
- ✱ ... *Jellybabies ($\times 1000$!)*
- ✱ ... *a proof for π equals three!*

- ✱ ... *that the sofa will stay in the Fachschaft's room after the test period is over.*
- ✱ ... *that the sofa will have to leave the Fachschaft's room after the test period is over.*

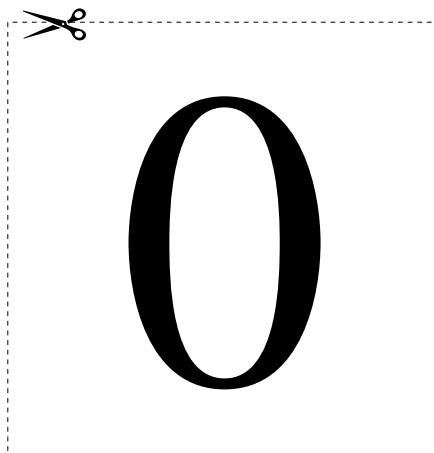
- ✱ ... *doubleflooding middlesoundblockers*
- ✱ ... *more time to design the MatheInfo's front page.*
- ✱ ... *peace on earth!*
- ✱ ... *Mojastre at the next Maths Dance!*
- ✱ ... *more colorful walls!*
- ✱ ... *functioning proseminars!*

- ✱ ... *Díplom!*
- ✱ ... *Vordíplom!*

- ✱ ... *Matthías Kegelmann for C4-professor!*

- ✻ ... more women in the maths choir (hint hint hint: Wednesdays, 5pm, S1/03-175)!
- ✻ ... more women in the maths dancing lessons!
- ✻ ... more women. Period.
- ✻ ... a Keimel twelve inches tall!
- ✻ ... shorter Fachschaft's meetings!
- ✻ ... visitors for Katja in Eindhoven!
- ✻ ... compensation of romantic deficits!
- ✻ ... space shuttles for everyone!
- ✻ ... chocolate vending machines!
- ✻ ... better weather, sunshine, weekend trips every weekend!
- ✻ ... Fachschaft seminars in Berlin, Vienna, Paris,...
- ✻ ... ice cream during the lecture breaks!
- ✻ I would prefer sandwiches and beverages!
- ✻ ... peace on earth!
- ✻ ... more Fachschaftlers!
- ✻ ... more Fachschaftlerinnen!
- ✻ I wish I knew how to fly!
- ✻ ... a warm bonnet - for flying!
- ✻ ... the abolishment of all differential equations!
- ✻ ... differential equations starting with the second semester!
- ✻ ... a bigger tasks blackboard in the Fachschaft's room!
- ✻ ... less tasks!
- ✻ ... hot and cold tapwater in the Fachschaft's room!

Binary digits to collect and trade



This is the first article in a series about the binary digits. In every article, one digit will be presented in depth and its use in history will be illuminated. Furthermore the digits can be cut out, collected and exchanged. It is also noticeable here, that the binary digits are just the elements of \mathbb{F}_2 .

We have chosen a in digit, which is special in many ways, to open our series: the 0 (in words: zero). Please notice the difference to the O. For comparison: 0, O. One might think, that 0 is a very small number, but a closer mathematical inquiry shows that \mathbb{F}_2 can't be ordered at all. Any claim in this direction must therefore be regarded as slander. And most importantly the 0 has enabled great things in histroy, e.g. the notation of numbers in multiple digits or roulette (in its unarmed version).

The 0 is used in many areas. Algebraists use it as additive neutral element, analyticists as lower bound for ε (compare 4th issue after the november issue of "Inforz"), numericists as the dreamvalue of their error function, statisticians for the probability of drawing a white ball in an urn with red balls and non-mathematicians as denominator of their fractions.

It is a controverse question whether 0 is natural. A non-representative survey brought that 42,86% of the mathematicians with an opinion on this think that "it is only natural to regard 0 as natural" while 57,14% think, that only "n0b0dies believe, that 0 is natural". One participant in the survey said: "that depends, doesn't it?!". Fortunately there is an ISO-standard concerning the natural numbers, which says, that 0 is natural (or not?).

Don't miss in our next issue: the 1—one of the most versatile binary digits and in contrast to 0 one-connected.

Stefan

So long ...

... and thanks for all the fish.

This concludes the English part of the Mathe-Info. Unluckily, we were not able to translate all of the German articles into English. So if you know some German, you might be interested in turning the Mathe-Info around now (or continue to read German upside-down) and reading some of the German articles.