

Chapter Highlights

Charles University in Prague Chapter of SIAM

June 18, 2013

SIAM SC Seminar

In the academic year 2012/2013 our Chapter held many events for students. Among them, there is one important activity of our Chapter that spans the whole academic year. It is a student seminar which is held in two-weeks interval. Although there are many seminars at our faculty, we managed to find our place and slowly attract more people from different departments either as speakers or attendees. The reason behind it is the format of talks that differs from other seminars. In comparison with the year 2011/2012 we decided to open the seminar to both graduate and undergraduate students. This led to the change of the seminar name - *SIAM SC seminar* instead of *Ph.D. seminar*.

Since the seminar is mainly for students, we require of a speaker the clarity of their talk and educational approach rather than list of their latest achievements. It is not that we discourage them from presenting their latest discoveries, however, we prefer the introduction in the problem and the help to get an insight. Since there are people from different fields it is more beneficial to concentrate on a big picture and important ideas rather than a particular result. So far this approach has been appreciated by all participants.

At the end of every talk there is a time for filling in an exam sheet. Usually, the exam sheet is brought by the speaker and it contains questions about their talk. It is very interesting to see whether people in the audience got the ideas from the talk and are able to answer all questions. Moreover, the speaker is given a form with overall evaluation of their talk. Thus, the speaker knows what quality their presentation was and how to improve it.

Because of the evaluation of speaker's skills, some students come to our seminar to rehearse their talk before a conference or a thesis defence. In particular, the very last seminar in this academic year featured three such events, during which students rehearsed their thesis defence. The list of all talks from the academic year 2012/2013 is below.

- Marek Netušil - 1D model of Fluid-tube Interaction
- Pavel Klavík - Graphs Drawing and the Visualization of Data
- Jan Kuřátko - Falsification of Hybrid Dynamical Systems
- Martin Pilát - Evolutionary Algorithms for Continuous Optimization
- Ivan Soukup - Weak Solutions for a Class of Nonlinear Integrodifferential Equations
- Václav Kučera - Discontinuous Galerkin Method for Solving PDEs
- Petr Petráček - Good, Bad and Ugly Functions
- Peter Franek - Introduction to the Computational Topology
- Tomáš Gergelits - Under the Hood of Conjugate Gradients
- Karel Vostruha - Counterexamples in PDEs
- Stefan Ratschan - Toward the Automatized Mathematician
- Vít Orava, Tomáš Zajíc, Jan Hodic - rehearsals for thesis defence



Excursion to the car factory ŠKODA AUTO

In order to promote our Chapter and increase the awareness of its activities among students, we decided to hold an event that would attract a wide range of participants. Thanks to financial support from the Academic Senate of Faculty of Mathematics and Physics we were able to pay for the bus transport from Prague to Mladá Boleslav (approximately 50 km far from Prague) and organise the excursion to the leading car producer in the Czech Republic ŠKODA AUTO on November 8th.

During the excursion participants visited the provisional museum (the building of the museum was being reconstructed) with an incredible exhibition of cars produced in one-hundred-year history of the company. Afterwards participants were allowed to entry one part of ŠKODA AUTO factory and examine the assembly line for gear units, engines and hydraulic-press lines. The size of the factory hall and the machinery really impressed everybody. In the meantime the guides informed us about the average daily production, material and energy consumption, salaries of workers, etc.

The excursion, which is not allowed for individual visitors, attracted 51 participants (13 females, 3 University staff), both undergraduate and graduate students of mathematics, physics and computer science. We believe that they were all really excited. The photograph of participants is attached.



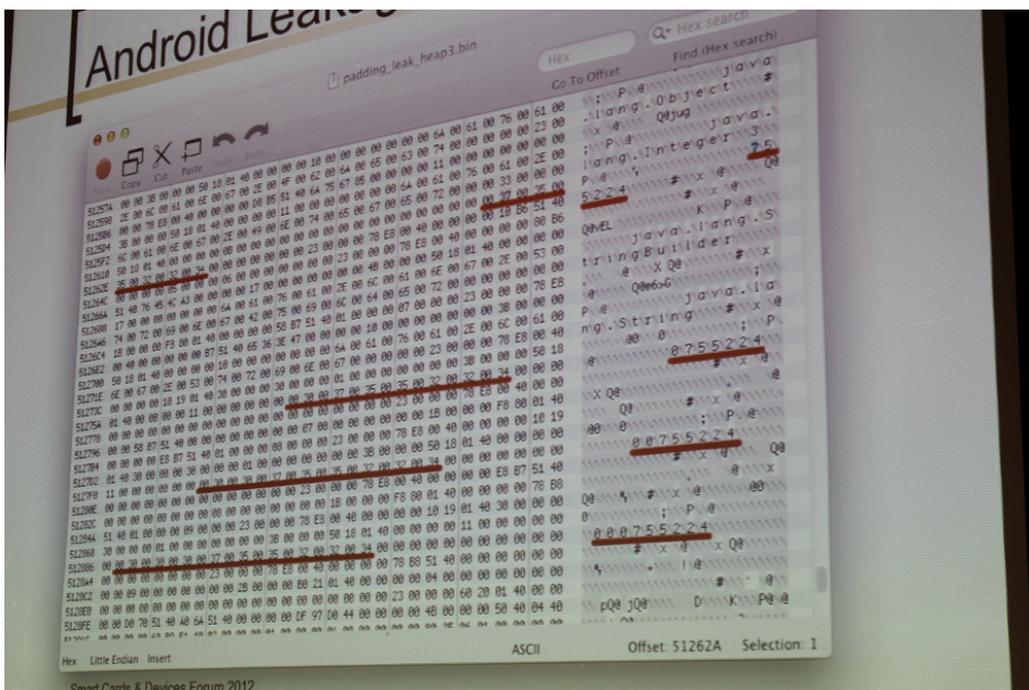
Meeting with alumni - From the Diary of a Professional Cryptologist



Resuming the series of meetings with Alumni of Faculty of Mathematics and Physics, we organised the lecture of Tomáš Rosa on November 15th. Presently, Tomáš Rosa works as a senior cryptologist in Raiffeisenbank. The lecture titled “From the Diary of a Professional Cryptologist” attracted many students from various departments. We do not exaggerate by using the word “many” because one of the largest lecture theatres at our faculty was almost full of students.

The talk itself was very entertaining and yet interesting. Tomáš Rosa did not give us a technical hard-to-understand presentation from the field of cryptography. The central theme of his talk was the daily life of a cryptologist and difficulties one encounters while working with people who do not know anything about security, but who need it in their work or private activities (such as electronic banking). Tomáš Rosa was very kind and showed us several flaws in security of mobile devices. He also demonstrated why it is difficult to develop a reliable application for managing your bank account which you can use in your smart phone. He illustrated all his points on a prepared application so we could see, e.g., how the “hacking” of a mobile phone works.

The lecture finished late in the afternoon. Still, nobody was sleepy.



Excursion to a nuclear reactor



Charles University in Prague Chapter of SIAM organised an excursion to a nuclear reactor for students and members of the Chapter. The reactor is located in one building of our faculty and it is mainly used for training students from other universities. The event took place on April 16th and attracted more than twenty people. The majority of the people attending the excursion were undergraduate students, however, there were also graduate students and Josef Málek, the advisor of the Chapter.

During the excursion we have learned a lot about nuclear energy, fission reaction, radiation and safety procedures in nuclear power-plants. It was very interesting to learn how very strict limits for everything there were. In our opinion, the most exciting part was when we got to the nuclear reactor

and could see what was inside. The construction of the academic nuclear reactor is special. It is open on the top which allows anyone to have a look inside and observe the fission reaction. Of course there is nothing to see except the uranium rods, control rods and plenty of special water, which shields us from radiation and serves as a coolant. The only visible sign indicating the fission reaction was on, was a digital display showing the amount of generated energy. We were also allowed to enter the control room and study the process of control of the nuclear reactor. The staff explained the whole process to us and demonstrated the stopping of the fission reaction by pushing down the control rods. Unfortunately, they were not allowed to show us any emergency stopping of the fission reaction.

We think this event was a great success. We were told by attendants how good it was compared to other trips to nuclear power-plants, where you are only allowed to visit a conference room. At the end, Josef Málek pointed out that he had been there for the first time even though he had worked at the University for so many years.

Posters

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Setkání se studenty matematického modelování a numerické matematiky



Rozhodujete se, kam na navazující magisterské studium? Vybrali jste si matematické modelování nebo numerickou matematiku a chcete se o nich dozvědět více? Využijte možnost setkat se se studenty těchto oborů a zjistit, co studium obnáší a co vám může nabídnout.

Přijďte ve středu 10. října od 12:20 do Respiria

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Setkání s úspěšnými žadateli GAUKu

Chystáte se podat žádost o grant GAUK? Nevíte, co má obsahovat? Sdílejte tipy, jak žádost napsat?

16. října v 15:40 seminární místnost KNM
 Informační schůzka, kde se dozvíte co to je GAUK, kde najít informace, co si rozmyslet před psaním žádosti, jak vypadají úspěšné žádosti, jakých chyb se vyvarovat.



30. října v 15:40 seminární místnost KNM
 Setkání nad předběžnými verzemi vašich žádostí. Někteří z úspěšných žadatelů si spolu s vámi projdou své návrhy grantů a poradí vám, co je třeba vylepšit.

akce je určena všem žadatelům z matematické sekce

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Exkurze do výrobního závodu ŠKODA AUTO

Chcete se podívat, kde a jak vznikají moderní automobily? Jak vypadá výrobní linka? Co vše zvládnou stroje a kde se nasepak neobjednáte bez zářných českých ručiček?



Čtvrtek 8. listopadu odjezd 15:00 (metro Černý most), návrat cca v 19:00 tamtéž

Doprava do Mladé Boleslavi je hrazena a finanční podpory SKASu, účastníci si hradí pouze vstupné 45,-

Akce je určena pro všechny studenty MFF, počet míst je však omezen. **Přihlašujte se na siam@karlin.mff.cuni.cz**

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Ing. Tomáš Rosa, Ph.D. (X) Raiffeisenbank

Zápisník profesionálního kryptologa

15. listopadu od 17:20 v K1



Znáte se, že kryptologie je širokým oborem, kterému se mnoho nadaných lidí točí osobně. Někdo pracuje na sofistikované úrovni, je zaměstnanec vysoce náročného laboratorního ústavu, jiní to dělají na úrovni, že mohou jednoduché příklady se v grafu jednoduše transformovat do složitějších úkolů. Některé úkoly se řeší pomocí digitálních nástrojů, jiné jsou to prostě problémy na úrovni střední školy. Někdy se jedná o řešení, které se používá na úrovni školní matematiky a někdy o řešení, které používá bankovní aplikace pro mobilní telefony. Cílem přednášky je představit široké spektrum kryptologie, od jednoduchých aplikací až po složité problémy, které se řeší pomocí sofistikovaných nástrojů. Přednáška je určena pro všechny studenty MFF, kteří mají zájem o matematiku a kryptologii. Přednáška je určena pro všechny studenty MFF, kteří mají zájem o matematiku a kryptologii.

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 SIAM Student Chapter pořádá setkání s absolventkou

Beseda s absolventkou Mgr. Marcela Vitková, GENERALI PPF

čtvrtek 4. dubna od 15:40 v posluchárně M1. (MFF UK, Ke Karlovu 3)

SIAM Student Chapter pořádá setkání s absolventkou Matematicko-fyzikální fakulty UK, Marcela Vitková nejprve vystudovala matematické modelování ve fyzice a nastoupila do ÚTIA AV. Poté absolvovala, již jako zaměstnanec Allianz pojistovny, i kurzy finanční a pojistné matematiky a nyní pracuje jako Chief Life Actuary v Generali PPF Holdingu.



Jak na své studium vzpomínáte? Proč se rozhodli pro oblasť pojišťovnictví? Jaké jsou v současnosti možnosti uplatnění pro absolventy Matfyzu?

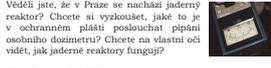
Přijďte si Marcelu Vitkovou poslechnout a sami se zeptejte na to, co vás zajímá!

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Exkurze do školního reaktoru VR-1

Věděli jste, že v Praze se nachází jaderný reaktor? Chcete si vyzkoušet, jaké to je v ochranném plášti poslouchat pípní osobního dozimetru? Chcete na vlastní oči vidět, jak jaderné reaktory fungují?



SIAM Student Chapter pořádá exkurzi do školního reaktoru VR-1 ("Vrabeč") FJFI ČVUT v Praze. V průběhu exkurze je připraven výklad o funkci a využití reaktoru, jaderné bezpečnosti i ukázkou provozu.

Využijte jedinečné příležitosti, reaktor není veřejně přístupný.

úterý 16. dubna od 13:00 do cca 15:00 v budově těžkých laboratorí v bloku L v Troji

Počet míst je omezen! **Přihlašujte se do 11.4.** na emailu siam@karlin.mff.cuni.cz

Webové stránky reaktoru: www.ReaktorVR1.eu

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Seminář SIAM Student Chapter

Co to je?
 Seminář určený (nejen) pro studenty vyšších ročníků aplikované matematiky, který probíhá jednou za 14 dní v úterý od 15:40 v seminární místnosti KNM (4-patro).

Proč přijít?
 Na rozdíl od jiných seminářů je důraz kladen na kontakt s účastníky a srozumitelnost.

Proč přednášet?
 Na závěr každého semináře poskytují účastníci přednášejícímu zpětnou vazbu (co by mohli vylepšit, co napak vysvětlit podrobněji a podobně...)

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