Summer School on

Numerical Optimization Software

University of Freiburg, July 25 – 29, 2016

Room 1098, Ground Floor Kollegiengebäude 1 (KG1), Platz der Universität 3, 79098 Freiburg

Welcome to Freiburg and to the Summer School!

This one week intensive course consists of lectures, computer exercises and an optional project. Participants are asked to bring laptops, preferably running Linux. All solvers can alternatively be accessed online via the NEOS server.

Topics: Continuous Optimization: Unconstrained Optimization, Nonlinear Least Squares, Nonlinear Systems, LP, QP, SOCP, SDP, NLP, modeling languages AMPL, CVX, automatic differentiation. Discrete Optimization: MILP, MINLP, travelling salesman (TSP), quadratic assignment problems (QAP). Open Source Software: SCIP, CLP, CBC, SeDuMi, SDPT3, IPOPT. Commercial Software: CPLEX, Gurobi, XPRESS, KNITRO.

The course requires solid mathematical background, computer skills, and basic knowledge in optimization. In the two weeks after the course, participants can work independently on projects, on which the final course evaluation (3 ECTS) is based.

We look forward to a successful week with you.

The organizers

Public Transportation

Public transportation in Freiburg is all run by VAG (Freiburger Verkehrs AG). The tram, bus, and subway system all have the same tickets. A one-way ticket within the city costs 2, 20 €. A cheaper option if you are planning on taking multiple trips is to buy 2 x 4-Fahrten-Karte. This costs 15, 40 € and gives you 2 tickets with 4 rides possible on each. You must punch the Fahrkarte in the machine once you board the vehicle. Transfers are allowed on the same ticket within a one hour period. Tickets can be bought on buses, or at ticket machines around the city.

Internet

You can access the internet via eduroam or ask us for temporary login details.

Eating out

During the course most of us have lunch at the university cafeteria Mensa Rempartstraße (Rempartstraße 18, 79098 Freiburg). Here you can obtain a Mensa Card for a deposit of 7 Euros. You can top up this card with cash and use it to pay for your meal. At the end of your stay you can return the card to receive your deposit back as well as any rest amount of money that is still on your card.

For Wednesday 27th July we have reserved some places in the restaurant FEIERLING in Freiburg (Gerberau 46, 79098 Freiburg). We can sit outside if the weather is nice or otherwise meet inside the restaurant. This gives us an opportunity to socialize, have a drink or some food together.

Contact information

Should you encounter any problems please feel free to contact Gianluca (+49 1577 120 5372) or Christine (+49 176 988 34570)

Systems Control and Optimization Laboratory / Lehrstuhl für Systemtheorie, Regelungstechnik und Optimierung
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	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			Summer School on Numerical Optimization Software, July 25 – 29, 2016				
9:00	Unconstrained Optimization & Modelling Languages (AMPL)	Nonlinear Programming I	Continous Linear Programming & Quadratic Programming	Mixed Integer Linear Programming	Mixed Integer Nonlinear Programming		
10:30	**Coffee Break**	**Coffee Break**	**Coffee Break**	**Coffee Break**	**Coffee Break**		
11:00	Exercise 1	Exercise 3	Exercise 5	Exercise 7	Exercise 9		
12:30	**Lunch Break**	**Lunch Break**	**Lunch Break**	**Lunch Break**	**Lunch Break**		
14:00	Nonlinear Least Squares & Nonlinear Systems	Nonlinear Programming II	Conic Programming	Applications (TSP, QAP)	Wrap-up and Project Outlook		
15:30	**Coffee Break**	**Coffee Break**	**Coffee Break**	**Coffee Break**	**End**		
16:00	Exercise 2	Exercise 4	Exercise 6	Exercise 8			
17:30	Extra Time	Project Instructions	Extra Time	Extra Time			
18:00	**End**	**End**	**End**	**End**			
	18:30 Reception		19:00 Dinner Reservation (self-payment)				

List of Organizers and Teachers

Name	Institution
Adrian Bürger	HS Karlsruhe, Germany
Moritz Diehl	University of Freiburg, Germany
Gianluca Frison	University of Freiburg, Germany
Dimitris Kouzoupis	University of Freiburg, Germany
Hans Mittelmann	Arizona State University, USA
Christine Paasch	University of Freiburg, Germany