

Åbo Akademi
Matematiska institutionen
Fänriksgatan 3 B III vån.
8 February 2012

Seminarium i tillämpad matematik

Seminar in Applied Mathematics:

Semidefinite Optimization and Applications

The course 273033 **Seminar in Applied Mathematics** (5 sp) aims at introducing the notions of semidefinite programming (SDP) and semidefinite optimization.

The field of semidefinite programming deals with optimization problems over symmetric positive definite matrix variables with linear cost function and linear constraints. Popular special cases are linear programming and convex quadratic programming with convex quadratic constraints.

We start out by going through required basic material from linear algebra and classical optimization. Thereafter the focus is shifted toward SDP and various ways to implement SDP. Much emphasis will be put on some important large classes of applications. The detailed, but preliminary, outline of the course is attached. Note that all the material is downloadable from university web pages!

Prerequisites are basics of linear algebra or matrix theory and basic understanding of multivariable calculus and linear programming.

Assignments and home work: There will be no formal examination in the course. On the other hand, we plan to assign theoretical and practical problems illustrating different stages of the course. Some parts of the class work may also be assigned to participating students.

Language: English or Swedish, depending on the audience.

Schedule: The seminar starts on Thursday, March 1, and ends on Friday, May 18. We meet twice a week: Thursdays 15-17, Fridays 10-12. The class rooms vary slightly because of other reservations.

First meeting is on **Thursday, March 1, at 3 p.m. in Vektorrummet ASA B 311**, which is in the Mathematics Department, ASA Building, B entrance, 3rd floor (take the B entrance elevator). The second class on Friday, March 2, is also in Vektorrummet from 10 to 12.

The seminar is led by Dr Ray Pörn, Professor Göran Högnäs and doctoral student Anders Skjäl. The teachers are available by e-mail between the classes.

Welcome to our Seminar!

Göran Högnäs