Solving Overdetermined Polynomial Systems using Linear Algebra

This topic is meant for 1 student.
The location (Research unit) is ESAT/SCD

**Thesis topic**

**BACKGROUND**

Solving polynomial systems is an old yet very relevant mathematical problem which arises in a multitude of applications. Recently it was (re)discovered that this can be solved by computing eigenvalue decompositions of large matrices, which translates the problem from abstract algebra into numerical linear algebra.

This framework also provides a way to solve overdetermined systems of polynomial equations where well-known numerical algebra methods such as SVD are employed. Although in general such a system does not have an exact solution, the use of numerical linear algebra methods such as SVD look promising as to find the best approximate solution. This approach is relatively new and can provide numerical sound ways to deal with uncertainty and overdeterminedness.

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**Profile**

A keen interest in mathematics is necessary. Experience with MATLAB programming is a big asset. Knowledge of numerical linear algebra is advised.

**Daily supervisors**

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**Promotors**

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