

Real root classification and Grobner bases: algorithms, complexity, implementation and applications

Mots clés : Array

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- **Domaine scientifique principal:** Sciences et technologies de l'information et de la communication

Résumé du projet de recherche (Langue 1)

Polynomial system solving appears in many areas of engineering sciences such as robotics, chemistry, signal theory (among many others) as they encode non-linear geometric and static situations. In this PhD, one focuses on algorithmic problems coming from applications in medical imaging. They consist of classifying the number of real solutions to polynomial systems depending on parameters. The PhD candidate will use computer algebra methods to design powerful algorithms and implementations that scale enough for performing this classification on challenging applications. Complexity issues will be central as polynomial system solving boils down to computationally hard problems.