

SEMINAR

Grupo de Análise Funcional e Aplicações Functional Analysis and Applications Group

Symbolic computation applied to operator theory problems

Ana Conceição

Universidade do Algarve

Abstract

In our work we use the computer algebra system Wolfram Mathematica to implement analytical algorithms, developed by us, within the operator theory. The design of our algorithms is focused on the possibility of implementing on a computer all, or a significant part, of the extensive symbolic and numeric calculations present in the analytical algorithms. The methods developed have a potential of extension to more complex and general problems. By implementing these methods on a computer, new tools are created for exploring that same potential, making the results of lengthy and complex calculations available in a simple way to researchers of different areas. Furthermore, since most operator theory researchers are part of a group of non-programming experts, we decided to create and to provide them with a domain specific language (DSL) that aid the design of these type of algorithms. The idea is to provide a simple and efficient textual language to formalize mathematical models related with the problematic of operator theory, in a user-friendly environment.

This is a joint work with Jéssica Pires, Paula V. Martins e Tiago Côrrea.

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