

Seminar

Group of Algebra and Geometry

Lince: Programming with differential equations

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April 28, 2021, 14h00 – 15h00

<https://videoconf-colibri.zoom.us/j/83951613829>

This talk describes how Lince can be used to analyse programs that combine digital control with differential equations, known as hybrid programs. These programs naturally appear in a wide range of application domains, from biology and control theory to real-time software engineering. The entanglement of discrete and continuous behaviour inherent to such programs goes beyond the established computer science foundations, producing challenges related to e.g. infinite iteration and combination of hybrid behaviour with other effects.

Lince is an open-source tool that can be used directly from a web-browser, readily available to be used at <https://arcatools.org>. It provides a parser for deterministic hybrid programs and a set of companion analysis. Under the hood, Lince combines computations made by the browser and computations made on the cloud, relying on the SageMath symbolic engine to solve differential equations and perform algebraic simplifications.

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