



universidade
de aveiro



CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES
CENTER FOR R&D IN MATHEMATICS AND
APPLICATIONS

Gravitational Geometry and Dynamics Group Seminar

Mon. 12th December '22 On Campus at 11h30

Robinson–Trautman solutions in $(2+1)$ dimensions

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IMECC - UNICAMP

On campus – Sousa Pinto

The Robinson-Trautman (RT) spacetime is the simplest solution of General Relativity (GR) describing a compact source surrounded by gravitational waves. As an initial value problem, the RT spacetime evolution is a well-posed mathematical problem. The pertinent dynamical equations are equivalent to the so-called Calabi flow, and regular initial data evolve smoothly towards a final state corresponding to a remnant Schwarzschild black hole. Extensions of RT spacetimes for higher dimensions ($D > 4$) were recently proposed, and the essence of the RT evolution is unchanged: regular initial data evolve towards a final higher-dimensional Schwarzschild black hole. The situation for $D=3$ is quite different due to some peculiarities of low-dimensional GR. We will present a $D=3$ RT flow mimicking the essential properties of the Calabi flow. In particular, regular initial data evolve towards a final remnant BTZ black hole, and any possible asymmetry in the initial data is expelled as a radiation fluid.

[https://videoconfercolibri.zoom.us/j/96224138340?](https://videoconfercolibri.zoom.us/j/96224138340?pwd=YkZUMGILb0dqVjcxOVpXMTFVMTBxQT09)

[pwd=YkZUMGILb0dqVjcxOVpXMTFVMTBxQT09](https://videoconfercolibri.zoom.us/j/96224138340?pwd=YkZUMGILb0dqVjcxOVpXMTFVMTBxQT09)

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