Sixteenth Marcel Grossmann Meeting



Contribution ID: 387

Type: Talk in the parallel session

Exact gravitational waves in non-local gravity

Monday, 5 July 2021 18:40 (25 minutes)

We study exact solutions of infinite derivative gravity within the class of so-called almost universal space-times. For such an ansatz, the field equations reduce to a single non-local but linear equation which is exactly solvable with the ghost-free choice $\exp(-\ell^2)$

Box) of the non-local form factor by eigenfunction expansion or using the heat kernel method. This procedure allows us to obtain non-local analogues of Aichelburg–Sexl and Hotta–Tanaka solutions which represent gravitational waves generated by null sources propagating in Minkowski, de Sitter or anti-de Sitter backgrounds. We discuss properties of these non-local solutions and also point out that the non-locality regularizes curvature singularities at the locations of the sources.

Primary authors: KOLÁŘ, Ivan; MÁLEK, Tomáš (Institute of Mathematics, Czech Academy of Sciences); MAZUM-DAR, Anupam

Presenter: MÁLEK, Tomáš (Institute of Mathematics, Czech Academy of Sciences)

Session Classification: Ghost-Free Models of Modified Gravity: Massive Gravity, Horndeski and DHOST Theories, Other Related Models; Their Properties and Solutions.

Track Classification: Alternative Theories: Ghost-free models of modified gravity: massive gravity, Horndeski and DHOST theories, other related models; their properties and solutions.