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Hugo Roussille (ENS Lyon): Non-linear gravitational waves in scalar-tensor theories

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We construct an exact solution of Degenerate Higher-Order Scalar-Tensor (DHOST) theory which contains non linear gravitational waves. The solution is obtained by applying a disformal transformation to a similar solution in Einstein-scalar gravity. Its principal null directions are still geodesic, shear-free and twist-free. This new solution provides a first concrete arena to investigate the non linear regime of gravitational wave radiation in a wide family of higher order scalar-tensor theories. Furthermore, we present the investigation of a specific subcase of the solution which is of Petrov type D.

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