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Effective field theory of gravitational radiation DELPHINE PERRODIN, University of Arizona — Predicted by general relativity but not yet directly observed, gravitational waves could soon be detected at the Laser Interferometer Gravitational-Wave Observatory (LIGO). Coalescing compact binaries are powerful emitters of gravitational waves and provide a strong gravity environment ideal for the testing of gravity theories. We study the gravitational wave emission in non-relativistic binary systems, using an effective field theory formalism introduced by Goldberger & Rothstein, which takes into account the different scales involved. This formalism is applicable to all orders in the orbital velocity, surpassing previous post-newtonian calculations. We are especially interested in how the formalism can be applied to test alternative theories of gravity. This work has been done in collaboration with Sean Fleming.

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