

# Astrophysically relevant chaos in Extreme Mass Ratio Inspirals from spinning particles

Ondřej Zelenka

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An Extreme Mass Ratio Inspiral is the merger of a compact binary system with a very large ratio of masses, such as a supermassive black hole and a stellar mass compact object (black hole or neutron star). A model for such an event is the motion of a test spinning particle in a fixed spacetime background. We study the case of non-spinning supermassive black hole and spinning stellar mass compact object, which is described by the Mathisson-Papapetrou-Dixon equations in the Schwarzschild background. We investigate low values of the spin, show that chaotic behavior is present for astrophysically relevant scenarios and study the growth of prolonged resonances when deviating from the spinless case. We also demonstrate that chaos is encoded in the gravitational waveforms from such events.

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## References

- [1] Zelenka O., Lukes-Gerakopoulos G. & Witzany V., arXiv:1903.00360