

Abstract Submitted
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A new tool to check the accuracy of Analytic Spacetimes for binary black holes¹ JAM SADIQ², YOSEF ZLOCHOWER, Rochester Inst of Tech, HIROYUKI NAKANO, Ryukoku Univerity Kyoto Japan — Analytical spacetimes are an important and useful tool to study dynamics of binary compact objects and many astrophysically important phenomenon associated with them. Here we describe a new tool to measure the accuracy of these spacetimes by directly comparing the geodesic structure of a family of analytical spacetime with counterparts constructed using full numerical relativity simulations Our idea is to construct coordinate independent scalars by contracting the components of Riemann tensor with the combination of a set of four orthonormal vectors associated with geodesics. By comparing the coordinate independent scalars during evolution we measure how much the analytical spacetimes are similar to more accurate known solution that is the numerical one. I will present some preliminary tests using these techniques. We hope this tool is useful to find limitations of analytical spacetimes.

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²My research work is related to both numerical relativity and analytical approximate solutions of Einstein field equations. So I can be in either C6 or C8 category.

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