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New Classes of Warp Drive Solutions in General Relativity

Tuesday, September 24, 2019 5:10 PM (20 minutes)

We report on the results of our ongoing work on reducing the energy requirements of classical warp drives. The existing warp drive solutions by van den Broek and Alcubierre assume spherical symmetry. We show that by considering their counterparts of arbitrary shape, one can reduce the energy requirements by orders of magnitude. Further, I will outline a method of constructing more general classes of warp drives. As a demonstration, we have constructed, for the first time, a warp drive solution with a region resembling the ergosphere region of Kerr black holes. I will present on the properties of such drives and discuss the possibility of applying the Penrose process to them.

Presenter: Dr BOBRICK, Alexey

Session Classification: Faster Than Light - SpaceTime Navigation