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(G*) Marginally Outer Trapped (Open) Surfaces in 4+1 Dimensional Spacetimes

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In the case of binary black hole mergers, the surface of most obvious interest, the Event Horizon, is often computationally difficult to locate. Instead, it is useful to turn to quasi-local characterizations of black hole boundaries, such as Marginally Outer Trapped Surfaces (MOTS), which are defined for a single time slice of the spacetime, and the outer-most of which is the apparent horizon. In this talk, I will describe ongoing work focused on understanding MOTS in the interior of a five-dimensional black hole; both static and rotating. Similar to the four-dimensional Schwarzschild case previously studied, we find examples of self-intersecting MOTS with an arbitrary number of self-intersections. This provides further support that self-intersecting behavior is rather generic. I will also discuss the second stage of our research, which is for a rotating 5D black hole spacetime. These two cases fit into a larger project involving exploration of the generality of self-intersecting behaviour in MOTS, within spacetimes of increasing diversity.

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