

Abstract Submitted  
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**Energy Conditions and Junction Conditions** SHO YAIDA, DONALD MAROLF, University of California, Santa Barbara — It is well known from the work of Israel that one may construct "thin shell" solutions to the Einstein Equations in which the metric induced metric along the shell is continuous across it, but for which the extrinsic curvature jumps by an amount proportional to  $T_{ab}$ . One might, however, ask if these are the only solutions. That is, might there be other thin shell solutions in which the induced metric is not continuous? This talk will report partial results supporting the conjecture that any additional solutions must violate the weak null energy condition. In particular, we present a theorem showing that, given any sequence of diagonal metrics which 1) satisfies the weak null energy condition and 2) converges to a thin shell spacetime, the induced geometry along the shell in the limiting spacetime is in fact continuous across it. Thus the limiting spacetime falls within the class studied by Israel.

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