

Evolution of thin shells in D-dimensional General Relativity

This talk is based on Ref. [IJMP D 28, 1950069 (2019)]. We consider singular timelike spherical hypersurfaces embedded in a D-dimensional spherically symmetric bulk spacetime which is an electrovacuum solution of Einstein equations with cosmological constant. We analyse the different possibilities regarding the orientation of the gradient of the standard r coordinate in relation to the shell. Then we study the dynamics according to Einstein equations for arbitrary matter satisfying the dominant energy condition. In particular, we thoroughly analyse the asymptotic dynamics for both the small and large-shell-radius limits. We also study the main qualitative aspects of the dynamics of shells made of linear barotropic fluids that satisfy the dominant energy condition. Finally, we prove weak cosmic censorship for this class of solutions.