



Contribution ID: 499

Type: **Talk in the parallel session**

## Brane-world singularities in a fluid bulk

*Monday, 5 July 2021 17:30 (30 minutes)*

We present new results on the singularity structure and asymptotic analysis of a brane-world that consists of a flat 3-brane embedded in a five-dimensional bulk. The bulk matter is modelled by a fluid that satisfies a non-linear equation of state of the form  $p = \gamma \rho^\lambda$ , where  $p$  is the ‘pressure’ and  $\rho$  is the ‘density’ of the fluid. We show that for appropriate ranges of the parameters  $\gamma$  and  $\lambda$ , it is possible to construct a regular solution, compatible with energy conditions, that successfully localizes gravity on the brane. These results improve significantly previous findings of the study of a bulk fluid with a linear equation of state.

**Primary authors:** KLAUDATOU, Ifigeneia (University of the Aegean); Prof. ANTONIADIS, Ignatios; Prof. COTSAKIS, Spiros

**Presenter:** KLAUDATOU, Ifigeneia (University of the Aegean)

**Session Classification:** Topological Methods, Global Existence Problems, and Spacetime Singularities

**Track Classification:** Early Universe: Topological methods, global existence problems, and spacetime singularities