*Poster Session #C*
*Gravity theories*

**C03**

# Bifurcations of a soliton model of dark matter towards natural inflation

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Axion-like scalar fields with a periodic potential provide a solitonic model of dark matter halos of galaxies. Here we point out that their stability analysis bridges over, via bifurcations, to natural inflation. Then the (pseudo-) scalar part of the Lagrangian can be mapped into a gravity model mildly nonlinear in the scalar curvature. In the case of an axionic periodic potential, the equivalent Lagrangian L(R) exhibits a combination of swallow tail cusps with transitions of stability, well-known from catastrophe theory. The resulting almost Einsteinian branches indicate a 'unification' of dark matter, dark energy and inflation. (Physics Letters B)