

Canadian Association of Physicists

Association canadienne des physiciens et physiciennes

Contribution ID: 2803

Type: Invited Speaker / Conférencier(ère) invité(e)

Cuscuton Bounce

Monday 3 June 2019 10:45 (30 minutes)

In general relativity producing a regular bounce entails violation of Null Energy Condition for a dynamical source in the model.

That generically indicates existence of ghosts or other instabilities.

However, in cuscuton modification of gravity, the correspondence between a background bounce and violation of Null Energy Condition for dynamical sources is broken.

Cuscuton action, modifies equations of motion in Infra Red limit allowing the background to go through a regular bounce phase.

At the same time, since it does not contain any dynamical degrees of freedom, it does not lead to ghosts or other instabilities.

Here, I present a toy scenario of a regular bouncing cosmology and prove this claim

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Session Classification: M1-4 Mathematical Physics (DTP) | Physique mathématique (DPT)

Track Classification: Theoretical Physics / Physique théorique (DTP-DPT)