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Title:	Tachyonic vs quintessence dark energy: linear perturbations and CMB data
Authors:	Rajvanshi, Manvendra Pratap (/jspui/browse?type=author&value=Rajvanshi%2C+Manvendra+Pratap) Bagla, J S (/jspui/browse?type=author&value=Bagla%2C+J+S) Singh, Avinash (/jspui/browse?type=author&value=Singh%2C+Avinash) Jassal, H K (/jspui/browse?type=author&value=Jassal%2C+H+K)
Keywords:	Tachyonic quintessence dark energy
Issue Date:	2021
Publisher:	IOP Publishing
Citation:	Classical and Quantum Gravity, 38(19).
Abstract:	We use linear perturbation theory to study perturbations in dynamical dark energy (DE) models. We compare quintessence and tachyonic DE models with identical background evolution. We rewrite the perturbation equations for quintessence and tachyonic models in a form that makes it easier to see that these models are very hard to distinguish in the linear regime, especially when the equation of state $w$ is close to that of $\Lambda$ (i.e. in the limit $(1 + w) \ll 1$ ). We use cosmic microwave background data and parametric representations for the two models to illustrate that current observations cannot distinguish between models with the same background evolution. Further, we constrain tachyonic models with the Planck data. We do this analysis for exponential and inverse square potentials and find that the intrinsic parameters of the potentials remain very weakly constrained. In particular, this is true in the regime allowed by low redshift observations.
Description:	Only IISERM authors are available in the record
URI:	<a href="https://doi.org/10.1088/1361-6382/ac1b49">https://doi.org/10.1088/1361-6382/ac1b49</a> ( <a href="https://doi.org/10.1088/1361-6382/ac1b49">https://doi.org/10.1088/1361-6382/ac1b49</a> ) <a href="http://hdl.handle.net/123456789/4705">http://hdl.handle.net/123456789/4705</a> ( <a href="http://hdl.handle.net/123456789/4705">http://hdl.handle.net/123456789/4705</a> )
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