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Anisotropic 2-form dark energy

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We study the dynamics of dark energy in the presence of a 2-form field coupled to a canonical scalar field ϕ. We consider the coupling proportional to $e^{-\mu\phi/M_{\mathrm{pl}}}H_{\alpha\beta\gamma}H^{\alpha\beta\gamma}$ and the scalar potential $V(\phi) \propto e^{-\lambda\phi/M_{\mathrm{pl}}}$, where $H_{\alpha\beta\gamma}$ is the 2-form field strength, μ, λ are constants, and M_{pl} is the reduced Planck mass. We show the existence of an anisotropic matter-dominated scaling solution followed by a stable accelerated fixed point with a non-vanishing shear.Even if $\lambda \geq calO(1)$, it is possible to realize the dark energy equation of state w_{DE} close to -1 at low redshifts for $\mu \gg \lambda$. The existence of anisotropic hair and the oscillating behavior of w_{DE} are key features for distinguishing our scenario from other dark energy models like quintessence.

Authors: Dr VALENZUELA-TOLEDO, César A. (Universidad del Valle); BELTRAN, Juan Pablo (Universidad Antonio Nariño); TSUJIKAWA, Shinji (Tokyo University of Science); KASE, Ryotaro (Tokyo University of Science); GUARNIZO TRILLERAS, Alejandro

Presenter: Dr VALENZUELA-TOLEDO, César A. (Universidad del Valle)

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