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Modulus stabilization of modular flavor models in Jordan frame supergravity

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We propose to discuss the modular flavor model and the stabilization of single modulus field in the Jordan frame supergravity with non-minimal scalar-curvature coupling of the form $\Phi(\tau,\bar{\tau})R$. Modular invariance and positivity of the scale factor constrain stringently the form of the frame function, consequently the Kahler potential. We discuss some general properties of scalar potentials after the scale transformation from the Jordan frame to the Einstein frame. We find that the shape of the resulting scalar potential in the Einstein frame is quite different from that of ordinary single modulus stabilization mechanism. The scalar potential could be stationary at the $i\infty$ fixed point, leading to a runaway type vacuum. We also discuss numerically the modulus stabilization for some simplified scenarios.

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