

# A $Q$ -curvature positive energy theorem with applications to rigidity phenomena

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In this talk we will present recent results related to a notion of energy, which is associated to fourth-order gravitational theories, where it plays an analogous role to that of the classical ADM energy in the context of general relativity. We shall show that this quantity obeys a positive energy theorem with natural rigidity in the critical case of zero energy. Furthermore, we will comment on how the resulting notion of energy is deeply connected to  $Q$ -curvature, underlying positive energy theorems for the Paneitz operator as well as several rigidity phenomena associated to  $Q$ -curvature analysis.

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