Conformally Flat Polytropes for Anisotropic Fluid in f(R) Gravity ZOHA TARIQ, MUHAMMNAD ZAEEM-UL-HAQ BHATTI, University of the Punjab — This paper provides a detailed analysis of conformally flat spherically symmetric fluid distributions governed by a polytropic equation of state utilizing the metric f (R) gravity, R being the Ricci scalar. The Lane-Emden equation is formulated using Bianchi identity and couple of polytropic equation of states. We discussed two families of relativistic polytropes and the constraints are evaluated for their necessary physical applications. The physical practicability of polytropes is scrutinized via energy conditions. An explicit relation of the Weyl tensor with material variables is explored. The condition of vanishing Weyl tensor is imposed on the Lane-Emden equation in the background of particular f (R) model in both cases to explore physical constraints on polytropes.

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