World Scientific

The effect of loop quantum gravitational rainbow functions on the formation of naked singularities

Moh Vaseem Akram,[*,¶] Imtiyaz Ahmad Bhat,[†,‡,‖]
Anver Aziz[*,**] and Mir Faizal[§,††]

[*]*Department of Physics,*
Jamia Millia Islamia,
New Delhi, India

[†]*Center for Theoretical Physics,*
Jamia Millia Islamia,
New Delhi, India

[‡]*Department of Physics,*
Central University of Kashmir,
Ganderbal 191201, India

[§]*Canadian Quantum Research Center 204-3002,*
32 Ave Vernon, BC, Canada V1T 2L7
[¶]*moh158947@st.jmi.ac.in*
[‖]*imtiyaz@ctp-jamia.res.in*
[**]*aaziz@jmi.ac.in*
[††]*mirfaizalmir@gmail.com*

In this paper, we will investigate the consequences of loop quantum gravitational modifications on the formation of naked singularities. The loop quantum gravitational effects will be incorporated in the collapsing system using gravity's rainbow. This will be done by using rainbow functions, which are constructed from loop quantum gravitational modifications to the energy momentum dispersion. It will be observed that this modification will prevent the formation of naked singularity. Thus, such a modification can ensure that the weak cosmic censorship hypothesis will hold for any collapsing system

Keywords: Gravitational collapse; loop quantum gravity; naked singularity; weak cosmic censorship.

[‖]Corresponding author.