



Contribution ID: 283

Type: Poster

## Electromagnetic extension of Buchdahl bound in $f(R, T)$ gravity

We develop a static charged stellar model in  $f(R, T)$  gravity where the modification is assumed to be linear in  $T$  which is the trace of the energy momentum tensor. The exterior spacetime of the charged object is described by the Reissner-Nordström metric. The interior solution is obtained by invoking the Buchdahl-Vaidya-Tikekar ansatz, for the metric potential  $g_{rr}$ , which has a clear geometric interpretation. A detailed physical analysis of the model clearly shows distinct physical features of the resulting stellar configuration under such a modification. We find the maximum compactness bound for such a class of compact stars which is a generalization of the Buchdahl bound for a charged sphere described in  $f(R, T)$  gravity. Our result shows physical behaviour that is distinct from general relativity. In particular, our study shows that the compactness can be increased by considering a modification in Einstein's gravity which is further enhanced by the inclusion of charge.

### Email

rsharma@associates.iucaa.in

### Affiliation

Cooch Behar Panchanan Barma University

**Authors:** Mr SOUMIK BHATTACHARYA, Soumik (Cooch Behar Panchanan Barma University); Prof. MAHARAJ, Sunil (University of KwaZulu-Natal); SHARMA, Ranjan (Cooch Behar Panchanan Barma University)

**Presenter:** SHARMA, Ranjan (Cooch Behar Panchanan Barma University)

**Session Classification:** Classical & Quantum Gravity

**Track Classification:** Classical & Quantum Gravity