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**Cartan symmetries and global dynamical systems analysis in a higher-order modified teleparallel theory**
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**Abstract**
In a higher-order modified teleparallel theory cosmological we present analytical cosmological solutions. In particular we determine forms of the unknown potential which drives the scalar field such that the field equations form a Liouville integrable system. For the determination of the conservation laws we apply the Cartan symmetries. Furthermore, inspired from our solutions, a toy model is studied and it is shown that it can describe the Supernova data, while at the same time introduces dark matter components in the Hubble function. When the extra matter source is a stiff fluid then we show how analytical solutions for Bianchi I universes can be constructed from our analysis. Finally, we perform a global dynamical analysis of the field equations by using variables different from that of the Hubble-normalization. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

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