

┌ **The classification of Killing magnetic curves in $M^2(c) \times \mathbb{R}$** ┐

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Abstract

We investigate the trajectories of charged particles moving in a space modeled by the 3-space $M^2(c) \times \mathbb{R}$ under the action of the Killing magnetic fields.

All magnetic curves corresponding to the Killing magnetic fields on the 3-dimensional Euclidean space ($c = 0$) are explicitly determined. See [1]. We give the local description of the magnetic trajectories associated to Killing vector fields in $\mathbb{S}^2(c) \times \mathbb{R}$, providing their complete classification ($c = 1$). Moreover, some interpretations in terms of geometric properties are given. See [2]. A study for Killing magnetic curves in $\mathbb{H}^2(c) \times \mathbb{R}$ is in progress ($c = -1$).

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