Year: 2020 | **Vol.: 96** | **Fasc.: 3-4**

Title: Complete surfaces with zero curvatures in conformally flat spaces

Author(s): Kellcio Araujo, Armando Corro, Romildo Pina and Marcelo Souza

In this paper, we introduce a family of Riemannian manifolds $\mathbb{E}^3_F$, which are Euclidean space $\mathbb{R}^3$ endowed with conformally flat metrics. We characterize rotational surfaces with constant Gaussian and extrinsic curvatures in $\mathbb{E}^3_F$. We present a particular space that is isometric to $\mathbb{H}^2 \times \mathbb{S}^1$, and, using a special parametrization, we construct a family of complete rotational surfaces with zero Gaussian and extrinsic curvatures in $\mathbb{H}^2 \times \mathbb{S}^1$. We have built a special space that is a warped product $\mathbb{H}^2 \times_f \mathbb{R}$, which is a complete space foliated by complete surfaces of constant Gaussian curvature -1; this shows that the hyperbolic space $\mathbb{H}^2$ is isometrically immersed into the space $\mathbb{H}^2 \times_f \mathbb{R}$, and this space is isometric to neither $\mathbb{H}^3$ nor $\mathbb{H}^2 \times \mathbb{R}$, showing that in the ambient space, $\mathbb{H}^2 \times_f \mathbb{R}$ Hilbert theorem does not hold.

Address:
Kellcio Araujo
Departamento de Matemática
Universidade de Brasilia - UnB
70910-900, Brasilia, DF
Brazil

Address:
Armando Corro
Instituto de Matemática e Estatística
Universidade Federal de Goiás - UFG
74690-900, Goiânia, GO
Brazil

Address:
Romildo Pina
Instituto de Matemática e Estatística
Universidade Federal de Goiás - UFG
74690-900, Goiânia, GO
Brazil

Address:
Marcelo Souza
Instituto de Matemática e Estatística
Universidade Federal de Goiás - UFG
74690-900, Goiânia, GO
Brazil