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Title: The regular prism tilings and their optimal hyperball packings in the hyperbolic n -space

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In this paper we investigate the n -dimensional ($n \geq 3$) hyperbolic prism honeycombs, which are generated by the “inscribed hyperspheres”. The 3-dimensional prism tilings (mosaics) were classified by I. VERMES in [V72] and [V73]. He found infinitely many prism tilings, whose optimal hyperball packings and metric data are determined by the author in [Sz04]. In the hyperbolic 4-space $\mathbb{H}^4$ there are only 2 analogous honeycombs whose metric data and the densities of their optimal hyperball packings are determined in this paper. In $\mathbb{H}^5$ there are 3 types of these mosaics, whose analogous problems will be discussed elsewhere. In the hyperbolic n -space $\mathbb{H}^n$ ($n > 5$) there are no such regular prism tilings. Our method and computations are based on the projective interpretation of the hyperbolic geometry.

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