DIRECTIONS IN HYPERBOLIC LATTICES

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Abstract: It is well known that the orbit of a lattice in hyperbolic n-space is uniformly distributed when projected radially onto the unit sphere. In the present work, we consider the fine-scale statistics of the projected lattice points, and express the limit distributions in terms of random hyperbolic lattices. This provides in particular a new perspective on recent results by Boca, Popa, and Zaharescu on 2-point correlations for the modular group, and by Kelmer and Kontorovich for general lattices in dimension n = 2. This is joint work with Ilya Vinogradov.