Frank Farris from Santa Clara University

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MEB 246

Spherical Harmonics for Cosmology and Mathematical Art

Frank Farris from Santa Clara University

One likely model for the shape of the universe is the Poincaré dodecahedral space, which is a quotient of the 3-sphere by the action of the icosahedral group. To help cosmologists, Jeff Weeks adopted a method originally proposed by Klein to find all the spherical harmonics invariant under the icosahedral and other polyhedral groups. In trying to connect the method to polyhedrally-invariant functions on the 2-sphere, we discovered an interesting connection to self-mappings of the 2-sphere, opening the door to a new technique for mathematical art. (Joint work with Jeff Weeks.)

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