Contribution ID: **1**   Type: **not specified**

Gerd Schröder-Türk (Murdoch University): The Gyroid - Nature's best attempt at embedding the Hyperbolic Plane in Euclidean space

Monday 19 February 2024 13:00 (30 minutes)

By Hilbert's famous theorem, all infinite symmetric saddle surface with zero mean curvature (ie minimal surfaces) must have variations of the Gauss curvature. For bicontinuous minimal surfaces which divide space into two domains and define network-like domains, the Euler-Poincare number and hence the average Gauss curvature is negative. However, these surfaces also always have flat points with Gauss curvature zero. In Euclidean space, the perfect solution of a minimal surface with no variations in Gauss curvature does not exist. But is the Gyroid the minimal surface with the smallest degree of the unavoidable variations of Gauss curvature?