Intrinsic Visualization in the Thurston's Geometries

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This lecture explores the intrinsic visualization of Thurston's Geometries. This is a topic in mathematical visualization that combines the areas of geometry and topology, with concepts of computer graphics. The content of this lecture serves both experts and students. Although this is a short lecture, it is self-contained since it considers all the ideas, motivations, references, and intuitive explanations of the required fundamental concepts. Several conditions made this a special moment for such a topic. On one hand, the development of mathematical research, and graphics algorithms have provided the necessary theoretical framework. On the other hand, the evolution of media technologies allows us to be immersed in three-dimensional spaces using Virtual Reality (VR).

Prerequisites: Basic concepts of Topology, Differential Geometry, Visualization, Computer Graphics and Linear Algebra.