

## **Farey addition, Pappus's Theorem, and bendings of the Farey Tiling**

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If you don't learn how to correctly add fractions in grade school, you might end up using Farey addition to add them. This "adding mistake" turns out to be an important operation in its own right, closely connected to continued fractions and the modular group. In this talk I will explain how to view Pappus's Theorem, a classic theorem in projective geometry, as a deformation of Farey addition. I will use this viewpoint to construct patterns of geodesics in the higher rank symmetric space  $SL_3(\mathbb{R})/SO(3)$  which have the same combinatorial structure as the Farey tiling of the hyperbolic plane, except that they are geometrically bent. One can view these as something like higher rank pleated surfaces.