Dehn filling of a Hyperbolic 3-manifold

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An operation of Dehn surgery is defined for manifolds only in dimension 3 and consists of cutting a tubular neighborhood of a closed curve and gluing back a solid torus to its boundary along a surgery slope. The theorem of Lickorish–Wallace says that any closed, orientable connected 3-manifold can be obtained by Dehn surgery along a link in the 3-sphere.

Later W. Thurston proved a remarkable theorem that Dehn surgery of a cusped hyperbolic 3-manifold is again a hyperbolic manifold for all slopes except a finite set of them.

We investigate the hyperbolic Dehn surgery namely Dehn parental test. Using previous results of C. Hodgson–S. Kerckhoff and R.Haraway. we verify wheter one of two manifolds is obtained from another one via hyperbolic Dehn filling.

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