- For a closed Riemann surface M, there exists a representation $\rho = \rho_M : \pi_1(M) \to \mathrm{Isom}^+(\tilde{M})$ such that M is isometric to $\Gamma\backslash\tilde{M}$, where $\Gamma = \Gamma_M = \rho(\pi_1(M))$.
- When M has genus > 1, the universal cover $\tilde{M}$ is the hyperbolic plane $\mathbb{H}$, and $\mathrm{Isom}^+(\mathbb{H}) \approx \mathrm{PSL}(2, \mathbb{R})$.

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objective: modularize the argument

- for a subset A of T, let G_A be $\cap_{x\in A} G_a$ where G_a is the isotropy subgroup of G at a.
- for a subgroup H of G, let T^H be the subtree of fixed points of H acting on T.
- Observations:
  - What can be said of G_{T^H} vis-a-vis H?
  - What can be said of T^{G_A} vis-a-vis A? Answer: (1) T^H is connected for any H, so at the very least, this will contain the subtree spanned by A. (2) there exists a [core] geodesic $c = c(A)$ and a radius $r = r(A)$ such that $T^{G_A} = B_r(c) = \cup_{x\in c} B_r(x)$.
  - Under what conditions on H, H' will $G_{T^H} = G_{T^{H'}}$?
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