



Everything You Always Wanted to Know About Covering Spaces

Some famous coverings.

1. $S^n \rightarrow \mathbb{R}P^n$.

2. S^3 is a double cover of $SO(3)$.

3. $\mathbb{H}^2 \rightarrow \Sigma_g$ for $g \geq 2$.

4. Lens spaces, for relatively prime $p, q \in \mathbb{Z}$,
 $S^3 = \{(z_1, z_2) \in \mathbb{C}^2 : |z_1|^2 + |z_2|^2 = 1\} \rightarrow$
 $L_{p,q} = S^3 / (z_1, z_2) \sim (e^{2\pi i/p} z_1, e^{2\pi i q/p} z_2).$

Some Coverings of δ_b^a (from Hatcher's *Algebraic Topology*, page 58):

