

Info

This note, that [was found here](#), as a part of [a collection](#) is written (completely with human hands) by [Rupadarshi Ray](#), was created on March 4, 2026 9:38:52 PM, was last modified on August 28, 2026 2:56:46 AM, and was exported on September 7, 2026 3:09:47 PM.

Kleinian groups $\Gamma <_{\mathsf{d}} PSL(2)(\mathbb{C})$

$\leftrightarrow$

Hyperbolic 3-manifolds/orbifolds $\Gamma \backslash \mathbb{R}H^3$

```
import snappy

def census_info(census, name):
    M = census[0]

    return name, len(census)

censuses = [
    ("OrientableCuspedCensus", snappy.OrientableCuspedCensus),
    ("NonorientableCuspedCensus", snappy.NonorientableCuspedCensus),
    ("OrientableClosedCensus", snappy.OrientableClosedCensus),
    ("NonorientableClosedCensus", snappy.NonorientableClosedCensus),
]

print(f"{'Census':30} {'Count':10}")
print("-" * 55)

for name, C in censuses:
    name, count = census_info(C, name)
    print(f"{name:30} {count:<10}")
```

closed

```
import snappy
count = 2000
print("Name, Volume, Link complement?, Homology")
while count > 0:
    M = snappy.OrientableClosedCensus[count]
    print(M, M.volume(), snappy.LinkExteriors.identify(M), M.homology())
    count = count-1
```

finite volume

```
import snappy
count = 2000
print("Name, Volume, Link complement?, Homology")
while count > 0:
    M = snappy.OrientableCuspedCensus[count+40000]
    print(M, M.volume(), snappy.LinkExteriors.identify(M), M.homology())
    count = count-1
```

“@1979gromov_hyperbolic.pdf#page=3&rect=34,71,456,228” could not be found.

“@1979gromov_hyperbolic.pdf#page=4&rect=35,412,439,630” could not be found.

geometrically finite

Current note has 7 direct children and 9 total descendants.

- stem
 - Objects stemming from $PSL(2)(\mathbb{C})$
 - Kleinian groups $\Gamma <_{\mathsf{d}} PSL(2)(\mathbb{C}) \leftrightarrow$ Hyperbolic 3-manifolds/orbifolds $\Gamma \backslash \mathbb{R}H^3$
 - Finitely generated, free Kleinian groups
 - 2-generated Kleinian groups
 - Finitely generated Kleinian groups $\leftrightarrow$ topologically tame oriented hyperbolic 3-manifolds/finite degree orbifold covers of
 - Finiteness of finitely generated Kleinian groups
 - Building hyperbolic 3-manifolds by gluing polyhedra
 - Kleinian group with $\Lambda(\Gamma) \neq \partial \mathbb{R}H^3$
 - Thick-thin decomposition of hyperbolic 3-manifolds
 - Kleinian ultra-Schottky groups $\leftrightarrow$ convex cocompact hyperbolic interior of 3-handlebodies
 - Space of Schottky groups

And it has 2 siblings.

- stem
 - Objects stemming from $PSL(2)(\mathbb{C})$
 - Kleinian groups $\Gamma <_{\mathsf{d}} PSL(2)(\mathbb{C}) \leftrightarrow$ Hyperbolic 3-manifolds/orbifolds $\Gamma \backslash \mathbb{R}H^3$

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- $\text{Rep}(F_2, PSL(2)(\mathbb{C}))$