

Chern-Simons Theory and  
Arithmetic

Mostow Rigidity: If  $\Gamma_{1,2}$  are isomorphic subgroups of  $\mathrm{PSL}_2(\mathbb{C})$ , then they are conjugate.  $\uparrow$   
discrete?

The Bloch Group:

from [http://arxiv.org/PS\\_cache/math/pdf/0307/0307092v2.pdf](http://arxiv.org/PS_cache/math/pdf/0307/0307092v2.pdf) by Neumann:

**Definition 1.1** Let  $k$  be a field. The *pre-Bloch group*  $\mathcal{P}(k)$  is the quotient of the free  $\mathbb{Z}$ -module  $\mathbb{Z}(k - \{0, 1\})$  by all instances of the following relation:

$$[x] - [y] + \left[\frac{y}{x}\right] - \left[\frac{1-x^{-1}}{1-y^{-1}}\right] + \left[\frac{1-x}{1-y}\right] = 0, \quad (1)$$

This relation is usually called the *five term relation*. The *Bloch group*  $\mathcal{B}(k)$  is the kernel of the map

$$\mathcal{P}(k) \rightarrow k^* \wedge_{\mathbb{Z}} k^*, \quad [z] \mapsto 2(z \wedge (1-z)).$$