

## **l-adic aspects of the Modular Tower program**

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**Abstract:** There is an obstruction to realizing a finite group  $G$  as a regular Galois group over  $\mathbb{Q}$  with a bounded number of branch points: if  $G$  has a  $p$ -subgroup with a big abelianization, then branch points should coalesce modulo small primes or  $p$  should divide some ramification index. We will explain this and will give some consequences for the Regular Inverse Galois problem and for the Modular Tower program where the obstruction comes in full light and leads to some weak version of the main conjecture of this program. We will also recast previous results on  $\ell$ -adic realisations in this perspective.

### **References:**

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