

## ASPECTS OF BELYI MAPS

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A Belyi map is a finite morphism to the complex projective line that is branched above at most three points. Surprisingly, the algebraic curves that admit a Belyi map are exactly those that are defined over the algebraic closure of the rationals. Due to the simple combinatorial description of covers as finite sets with an action of the fundamental group, the theory of Belyi maps therefore gives a way to study the absolute Galois group of the rationals, one of Grothendieck's dreams.

This talk will explain the links between Belyi maps and other areas of study, such as Shimura curves, inverse Galois theory, and number fields with small ramification. Hopefully this will make show how Belyi maps, like (and linked with) modular forms, can be a useful tool for any computationally inclined number theorist. Finally, the currently available techniques to compute Belyi maps are described, including a recent one due to Klug, Musty, Schiavone and Voight.

*Joint work with John Voight.*