Recent development of the PARI/GP computer algebra system

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Introduction

PARI/GP is a computer agebra system oriented toward number theory.

- ▶ PARI is a C library, allowing fast computations.
- ▶ GP is an easy-to-use interactive shell giving access to the PARI functions.
- ▶ GP is the name of gp's scripting language.
- ▶ GP2C , the GP→ PARI compiler allows to convert GP scripts to C.
- ▶ available as a javascript application and a native Android app (PariDroid)
- ▶ part of Sagemath and jupyther
- ▶ Website: https://pari.math.u-bordeaux.fr
- ▶ Free software distributed under the GNU GPL 2 or superior

What PARI/GP can do ?

- ▶ polynomials and linear algebra
- ▶ lots of transcendental functions and summations methods
- ▶ number-theoretical function
- ▶ p-adic transcendental functions
- ▶ lattices and quadratic forms
- ▶ Diophantine equations
- ▶ algebraic number fields
- ▶ Galois theory
- ▶ Class field theory

Recent additions

- ▶ associative and central simple algebras
- ▶ elliptic curves over finite fields
- ▶ elliptic curves over number fields
- ▶ hyperelliptic curves over finite fields
- ▶ genus-2 curves over the rationals
- ▶ modular forms for $\Gamma_0(N)$ with characters
- ▶ modular symbols for $\Gamma_0(N)$ without characters
- ▶ L-functions associated to all the above