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Alejandra Alvarado, Angelos Koutsianas, Beth Malmskog*
(bmalmskog@coloradocollege.edu), **Chris Rasmussen, Christelle Vincent** and **Mckenzie West**. *Solving the S-unit equation in Sage: Methods, Applications, and Next Steps*.

Many finiteness and enumerative problems in number theory rely on the finiteness/enumeration of the set of solutions to the equation $x+y=1$ over the group of S-units in a number field, where S is a finite set of primes. Unfortunately, this is a very difficult computational problem that has challenged mathematicians for decades. In the last several years, a group consisting of Alejandra Alvarado, Angelos Koutsianas, Beth Malmskog, Christopher Rasmussen, Christelle Vincent, and Mckenzie West created functions for Sage to solve this problem, the first publicly released implementation for general number fields. Their functions were incorporated into released versions of Sage in 2019. This talk will give a brief overview of the theory, methods, the capabilities of our implementation, applications in algebraic curves including cases of asymptotic Fermat's Last Theorem, and discuss the next steps in this ongoing project. (Received September 06, 2019)