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**P Guerzhoy\*** ([pavel@math.hawaii.edu](mailto:pavel@math.hawaii.edu)), Dept of Math, 2565 McCarthy Mall, University of Hawaii at Manoa, Honolulu, HI 96822. *On a classical Diophantine problem after Tunnell, Zagier, and Skoruppa*. Preliminary report.

The congruence number problem goes back to a question by Diophantus: given a positive integer  $n$ , determine whether or not  $n$  is the area of a right triangle with rational sides. In 1983, Tunnell put this problem into the framework of modular forms of weight  $3/2$ , and presented a solving algorithm. This algorithm boils down to calculating  $n$ -th Fourier coefficients of certain weight  $3/2$  modular forms presented as ternary theta-series. In 1991, Skoruppa produced another, quite different algorithm of calculating essentially same coefficients based on the theory of Jacobi forms. We present yet another algorithm which comes as a variation on the theme of a work by Zagier (1999). Although our algorithm is very close to that produced by Skoruppa, a conceptual proof of the equivalence of the two turns out to be involved. This presentation is about an ongoing project joint with K. Bringmann and B. Kane. (Received September 06, 2013)