

Choudhry, Ajai

An ancient Diophantine problem from the Bijaganita of Bhaskaracharya. (English)

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Summary: This paper is concerned with the ancient Diophantine problem of finding two perfect squares such that both, their sum and difference, when increased by unity, become perfect squares. Bhaskaracharya, in his 12th century treatise on algebra, had given an elegant method of finding integer solutions of this problem. Subsequently, only one parametric solution has been published. We obtain an infinite sequence of parametric solutions of this problem. All of these parametric solutions readily yield integers with the desired property. We also obtain the complete solution in rational numbers of this Diophantine problem.

MSC:

11D09 Quadratic and bilinear Diophantine equations

Keywords:

quadratic functions made perfect squares; Bhaskaracharya