A QUADRIC WITH ARITHMETIC PAUCITY

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ABSTRACT. The quadric given by the equations $x_1^2 + x_2^2 + x_3^2 = y_1^2 + y_2^2 + y_3^2$, $x_1 + x_2 + x_3 = y_1 + y_2 + y_3$ has almost all its solutions with prime coordinates on the diagonals. This is shown in quantitative form. A similar statement holds for integral solutions whose coordinates can be written as the sum of two squares.

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