Title: An interesting quartic surface, everywhere locally solvable, with cubic point but no global point

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There seem few examples in the literature of quartic surfaces defined over $\mathbb{Q}$ that are everywhere locally solvable, yet which have no global point. It is a delicate question as to whether such surfaces can possess points defined over an odd-degree number field, and to our knowledge no previous example is known. We give here an example of such a diagonal quartic surface which contains a point defined over a cubic extension field (and it follows that there exist number fields of every odd degree greater than 1 in which the surface has points). This surface is one member of a more general family of surfaces, each of which is also everywhere locally solvable but with no rational point.

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