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The extendibility of the parametric $D(-1)$-triples

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Abstract. Let N be a positive integer such that $4N^2+1=q$, where q is a prime. In this paper, we prove that the Diophantine $D(-1)$-triple of the form $\{1, 4N^2+1, 1-N\}$ cannot be extended to a quadruple in the ring $\mathbb{Z}[\sqrt{-N}]$, with a non-square integer $N>2$. If $N>2$ is a square, then $4N^2+1$ is not a prime, and the set $\{1, 4N^2+1, 1-N, 1+N\}$ is a $D(-1)$-quadruple in the ring $\mathbb{Z}[\sqrt{-N}]$, thus also in the ring of the Gaussian integers as well.

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