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Holomorphicity of real Kaehler submanifolds

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Abstract. Let $f : M^{2n} \to \mathbb{R}^{2n+p}$ denote an isometric immersion of a Kaehler manifold of complex dimension $n \geq 2$ into Euclidean space with codimension p. If the codimension satisfies $2p \leq 2n-1$, we show that generic rank assumptions on the second fundamental form of the submanifold imply that f has to be a minimal submanifold. In fact, if the codimension is $p \leq 11$ we prove that f must be holomorphic with respect to some complex structure in the ambient space.

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