Extensions of Real Kaehler submanifolds

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Let $f\colon M^{2n} \to \mathbb{R}^{2n+p}$, $2 \leq p \leq n-1$, be an isometric immersion of a Kaehler manifold into Euclidean space. Yan and Zheng conjectured that if the codimension is $p \leq 11$ then, along any connected component of an open dense subset of M^{2n}, the submanifold is as follows: it is either foliated by holomorphic submanifolds of dimension at least $2n-2p$ with tangent spaces in the kernel of the second fundamental form whose images are open subsets of affine vector subspaces, or it is embedded holomorphically in a Kaehler submanifold of $\mathbb{R}^{2n+p}$ of larger dimension than $2n$. This bold conjecture was proved previously by Dajczer and Gromoll for codimension $p = 3$ and then by Yan and Zheng for codimension $p = 4$. In this talk we present substantial progress regarding the Yan–Zheng conjecture.