Pseudo-umbilical real hypersurfaces in complex Grassmannians of rank two

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The complex Grassmannians of rank two (both the compact type and the noncompact type) of complex dimension are Riemannian symmetric spaces equipped with a Kähler structure and a quaternionic Kähler structure.

These geometric structures significantly impose restrictions on the geometry of a real hypersurface in complex Grassmannians of rank two. As an immediate consequence of the Codazzi equation of such submanifolds, the totally umbilicity are too strong to be satisfied by real hypersurfaces in complex Grassmannians of rank two.

We introduce the notion of pseudo-umbilical real hypersurfaces in complex Grassmannians of rank two and give the classification of such real hypersurfaces.