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The geometry of certain classes of almost complex surfaces in $SL(2, R) \times SL(2, R)$

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Abstract. This talk studies non-degenerate almost complex surfaces in the pseudo-nearly Kähler manifold $SL(2, \mathbb{R}) \times SL(2, \mathbb{R})$. We consider surfaces with constant isotropy and constant sectional curvature and examine the role of the almost product structure P in the geometry of such submanifolds. In particular, we analyze almost complex surfaces for which P maps the tangent bundle into the normal bundle. When the second fundamental form h is non-null, we obtain a classification of these surfaces and derive explicit local immersion formulae. Moreover, under the assumption of constant sectional curvature, we show that such surfaces must be flat and give their explicit immersion. In the case where the second fundamental form h is null, we analyze the resulting geometric conditions and describe the corresponding class of surfaces.

Keywords: Pseudo-nearly Kähler $Sl(2, R) \times Sl(2, R)$, almost complex surface, almost product structure.

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