

# Homogeneous Lagrangian submanifolds of the nearly Kähler $SL(2,\mathbb{R}) \times SL(2,\mathbb{R})$

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**Wednesday, December 11, 2024**  
**16:00-17:00h on campus in M.G.004**  
**Analysis & Geometry Seminar, Antwerpen**

In this talk we will analyze the nearly Kähler structure of the pseudo-Riemannian manifold  $SL(2,\mathbb{R}) \times SL(2,\mathbb{R})$ . As an analogue of  $S^3 \times S^3$ , we can define a natural almost product structure  $P$ , compatible with the nearly Kähler metric, by swapping the vector fields tangent to each component of  $SL(2,\mathbb{R}) \times SL(2,\mathbb{R})$ . Given a Lagrangian submanifold  $M$ , we will study the different forms the restriction  $P|_M$  can take. We will give a classification result for extrinsically homogeneous Lagrangian submanifolds of  $SL(2,\mathbb{R}) \times SL(2,\mathbb{R})$ . We will study two different ways that we can obtain this result, analyzing the pros and cons of each method.