

# DECOMPOSITION OF COMPLETE 3-MANIFOLDS OF POSITIVE SCALAR CURVATURE WITH SUBQUADRATIC DECAY

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**Abstract.** A fundamental question in the study of three-dimensional manifolds consists in understanding the topological structure of 3-manifolds that admit a Riemannian metric of positive scalar curvature, known as PSC manifolds. In the late 1970s, results by Schoen and Yau based on the theory of minimal surfaces and, in parallel, methods based on index theory developed by Gromov and Lawson, led to the classification of closed orientable PSC 3-manifolds: they are precisely those that decompose as a connected sum of spherical manifolds and  $\mathbb{S}^2 \times \mathbb{S}^1$  summands.

We will present a decomposition result for non-compact PSC 3-manifolds: if a complete Riemannian 3-manifold has positive scalar curvature with subquadratic decay at infinity, then it decomposes as a possibly infinite connected sum of spherical manifolds and  $\mathbb{S}^2 \times \mathbb{S}^1$ . We will also discuss the optimality of this result, which generalises a recent theorem of Gromov and Wang using a more topological approach. It is a joint work with Florent Balacheff and Stéphane Sabourau.