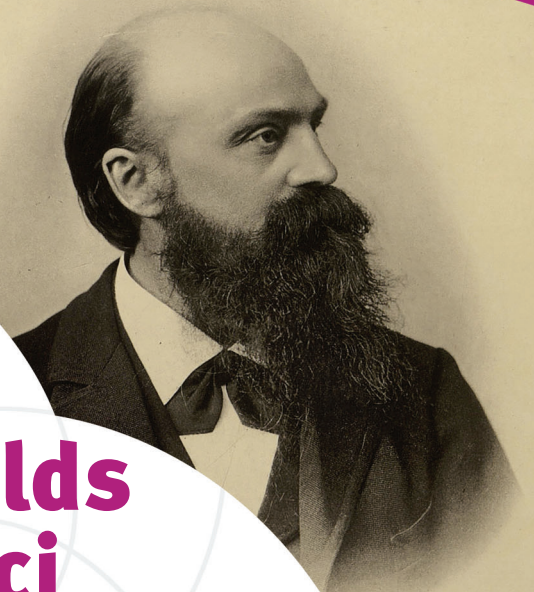


Universität  
Münster



Colloquium Wilhelm Killing

# The large-scale structure of 4-manifolds with nonnegative Ricci curvature and Euclidean volume growth

Prof. Dr. Daniele Semola (Universität Wien)  
28 November 2024 | 2:15 pm | M4

Ricci curvature is ubiquitous in mathematics: it appears in Hamilton's Ricci flow (a key tool in Perelman's resolution of the Poincaré conjecture), as well as in Einstein's equations of general relativity. Understanding its interplay with the global shape of Riemannian manifolds has been one of the key broad themes in geometric analysis since its early developments. While this interplay is well understood for manifolds with dimensions less than or equal to 3, several questions remain in dimension 4. After a gentle introduction to Ricci curvature, I will discuss joint work with Elia Bruè and Alessandro Pigati, in which we prove that any Riemannian 4-manifold with nonnegative Ricci curvature and Euclidean volume growth looks like a cone over a spherical space form at infinity. I will provide all the background needed for the precise statement, explain in which sense it is optimal, and explain why one might expect it to be true.

**Zoom <<https://www.zoom.us/j/66809935905>> will only be active if a request has been sent to <[mmtech@uni-muenster.de](mailto:mmtech@uni-muenster.de)> by 26 November 2024.**  
**Tea time starts at 3:15 pm in the Cluster Common Room (Orléans-Ring 10, ground floor).**

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