

The logo for SIMBa, consisting of the letters 'SIMBa' in a bold, black, serif font, centered on a solid orange rectangular background.

# Seminari Informal de Matemàtiques de Barcelona

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**Speaker:** Xavier Ramos Olivé.

**University:** Worcester Polytechnic Institute.

**Date:** Wednesday, November 18th, 2020.

**Schedule:** 12:00, *virtual coffee break*; 12:20, talk.

**Place:** Zoom (the link will be posted on our website).

**Language:** English.

**Title:** Geometric analysis under integral curvature conditions

**Abstract:** Curvature is a local property. However, assumptions on curvature have implications on global quantities, like the diameter, the eigenvalues of the Laplacian or topological invariants. An  $n$ -manifold with Ricci curvature larger than  $(n-1)K$  can not have a diameter larger than the one of the  $n$ -sphere with constant sectional curvature  $K$ . Similarly, the first non-zero eigenvalue of such a manifold can not be smaller than the one of the sphere. In recent years there has been an increasing interest in weakening the curvature assumptions from pointwise lower bounds to integral conditions. Integral conditions are much more general, they are more stable under perturbations of the metric, and can be more suitable for the study of geometric flows. We will discuss some classical and recent results in the fields of geometric analysis and comparison geometry with integral curvature conditions.

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**About us:** *SIMBa* is a youth mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last course undergraduate students. Our goals are divulging the knowledge from different branches of mathematics for those interested and promote networking between the attendants.

This seminar is backed by the Faculty of Mathematics and Computer Science at Universitat de Barcelona, Faculty of Mathematics and Statistics at Universitat Politècnica de Catalunya, the Department of Mathematics from Univesitat Autònoma de Barcelona, CRM, IMUB and BGSMath.

Fore more information, visit at [www.ub.edu/simba/en/](http://www.ub.edu/simba/en/).

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