

Systolic inequalities for Reeb flows

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Abstract:

The systolic ratio of a contact form on a 3-manifold is the quotient of the square of the period of the shortest closed Reeb orbit by the contact volume. In the case of the standard contact form on the 3-sphere, the value of the systolic ratio is 1. In a recent joint work with B. Bramham, U. Hryniewicz and P. Salomão, we have proved that the systolic ratio of contact forms close to the standard one on the 3-sphere does not exceed 1, and equals 1 if and only if the contact form is strictly contactomorphic to a constant multiple of the standard one. I will discuss the idea of the proof of this result, together with some applications in symplectic and Riemannian geometry.