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FINITENESS OF TOTALLY GEODESIC HYPERSURFACES

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There is a broad body of work devoted to proving theorems of the following form: spaces with infinitely many special sub-spaces are either nonexistent or rare. Such finiteness statements are important in algebraic geometry, number theory, and the theory of moduli space and locally symmetric spaces. I will talk about joint work with Simion Filip and David Fisher proving a finiteness statement of this kind in a differential geometry setting. Our main theorem is that a closed negatively curved analytic Riemannian manifold with infinitely many closed totally geodesic hypersurfaces must be isometric to an arithmetic hyperbolic manifold. The talk will be more focused on providing background and context than details of proofs and should be accessible to a general audience.