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On star-convex bodies with rotationally invariant sections

We will outline the proof that an origin-symmetric star-convex body K with sufficiently smooth boundary and such that every hyperplane section of K passing through the origin is a body of affine revolution, is itself a body of affine revolution. This will give a positive answer to the recent question asked by G. Bor, L. Hernández-Lamonedá, V. Jiménez de Santiago, and L. Montejano-Peimbert [DOI:10.2140/gt.2021.25.2621, Remark 2.9], though with slightly different prerequisites. Our argument is built mainly upon the tools of differential geometry and linear algebra, but occasionally we will need to use some more involved facts from other fields like algebraic topology or commutative algebra. The talk is based on the article [DOI:10.1007/s13366-023-00702-1].