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## A shape optimization problem of the first mixed Steklov-Dirichlet eigenvalue

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## <u>Abstract</u>

We consider a mixed Steklov-Dirichlet eigenvalue problem in annular regions bounded by two balls of fixed radii. To show that the maximum of the first eigenvalue is attained when two balls are concentric, we give a geometric proof which is motivated by Newton's shell theorem. This method is applicable to two-point homogeneous spaces with some restrictions on domains.

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