

# Isoperimetric inequalities for the lowest eigenvalue of a membrane with Robin boundary conditions

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**Abstract.** Many isoperimetric inequalities such as the Rayleigh-Faber-Krahn inequality generalize to problems with Robin boundary conditions provided the elasticity constant is positive. The method of domain variations indicates that this is not anymore true for negative elasticity constants. This talk will focus on local results and some attempts to derive global inequalities. It is based on a project in collaboration with Alfred Wagner on domain variations.