
OPTIMAL METRICS AND DOMAINS FOR THE FIRST CURL EIGENVALUE

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This talk surveys recent developments regarding optimisation problems for the first curl eigenvalue. In a first part I will discuss results concerning the existence of optimal metrics for the conformal curl eigenvalue and their relation to conformal eigenvalues of the Laplace-operator. In a second part I will discuss the question of existence of optimal domains for the first curl eigenvalue under a volume constraint. I will present existence results within certain subclasses of domains (e.g. convex domains) and also discuss restrictions on possible optimal shapes in the general setting in which the existence of optimal domains is still an open problem.