We analyse the conforming and nonconforming Virtual Element Method (VEM) \cite{Gardini2018, Gardini2018a} for the approximation of elliptic eigenvalue problems. As a model problem we consider the Laplace eigenvalue problem. We present two possible formulations of the discrete problem, derived respectively by the nonstabilized and stabilized approximation of the $L^2$-inner product, and we study the convergence properties of the corresponding discrete eigenvalue problem. The proposed schemes provide a correct approximation of the spectrum, in particular we prove optimal-order error estimates for the eigenfunctions and the usual double order of convergence of the eigenvalues. Moreover, we show a large set of numerical tests supporting the theoretical results, including a comparison between the conforming and the nonconforming schemes and present some possible applications of the theory.

**Keywords**: eigenvalue problem, conforming and nonconforming virtual element, polytopal meshes

**Mathematics Subject Classifications (2010)**: 65N30, 65N25, 65N12, 65N15

**References**
