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Hans W Volkmer* (volkmer@uwm.edu). *The Laplace-Beltrami operator on the embedded torus.*

The eigenvalues of the Laplace-Beltrami operator on the torus embedded in three-dimensional euclidian space are investigated. These eigenvalues are determined by the eigenvalues of Sturm-Liouville problems with separated boundary conditions. The corresponding Sturm-Liouville differential equation belongs to the Heun class. Eigenvalues are approximated by those of generalized eigenvalue problems involving tridiagonal matrices. A non-coexistence result is proved. The behavior of eigenvalues is studied when the ratio of inner and outer radius of the torus approaches zero or one. (Received July 11, 2019)