

Eigenvalues of  $-\Delta_p - \Delta_q$  under Neumann boundary condition

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*Abstract.* The eigenvalue problem  $-\Delta_p u - \Delta_q u = \lambda |u|^{q-2} u$  with  $p \in (1, \infty)$ ,  $q \in (2, \infty)$ ,  $p \neq q$  subject to the corresponding homogeneous Neumann boundary condition is investigated on a bounded open set with smooth boundary from  $\mathbb{R}^N$  with  $N \geq 2$ . A careful analysis of this problem leads us to a complete description of the set of eigenvalues as being a precise interval  $(\lambda_1, +\infty)$  plus an isolated point  $\lambda = 0$ . This comprehensive result is strongly related to our framework which is complementary to the well-known case  $p = q \neq 2$  for which a full description of the set of eigenvalues is still unavailable.