High-order finite element methods for optimal control problems

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Considered is a linear-quadratic elliptic boundary control problem on two-dimensional polygonal domains, where the observation domain for the state is either the whole domain Ω or a part of the boundary $\partial\Omega$. For solving these problems the boundary concentrated finite element method (BC-FEM), a high-order finite element method, can be used. After getting a general idea of the BC-FEM, a discretization error estimate for the case, where the observation domain is a part of the boundary, is given.

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