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Adaptive Triangulations

Recently developed adaptive methods, where the hierarchy of triangulations is not fixed in advance and depends on the local properties of the function, have received considerable attention in piecewise polynomial approximation over sets of triangulations. We introduce a new adaptive algorithm which, given a characteristic function of some bounded convex domain (a so-called cartoon image), constructs a hierarchical sequence of triangulations that adapt to the local properties of the function. In case of convex domains with piecewise-smooth boundary, this approximation method implies a “theoretically correct” rate of convergence and already outperforms the well-known wavelet methods.