Range restricted Hermite interpolation by parametric quadratic splines on Powell-Sabin refinements

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The problem of range restricted Hermite interpolation of scattered data is considered. The obstacles defining the range restrictions are assumed to be piecewise linear with respect to an admissible triangulation of the data sites. We show that existence of such constrained interpolants can be guaranteed using quadratic parametric splines on Powell-Sabin splits. These splines consist of PS tensioned finite elements described in Manni [2000].
In Herrmann/Mulansky/Schmidt [1996] the problem of range restricted Lagrange interpolation of scattered data is investigated. The existence of range restricted Powell-Sabin interpolants is proven for certain obstacles. If the obstacles are piecewise linear, however, the existence of range restricted Lagrange interpolants cannot be assured using the classic Powell-Sabin splines.

References

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