Convergence analysis of Hermite subdivision schemes of any arity

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Hermite subdivision schemes are particular vector subdivision schemes which produce function vectors consisting of consecutive derivatives of a certain function. The convergence and smoothness of Hermite subdivision schemes have been widely studied, while they are restricted in binary case. To fill this theoretical gap in the literature, we study the convergence of Hermite subdivision schemes covering every arity, which can be seen as a generalization of [7]. The convergence analysis is based on the connections among Hermite subdivision schemes, vector subdivision schemes and refinable function vectors. We provide a tool used to estimate the smoothness of Hermite subdivision schemes of every arity by exploiting a quantity defined by sum rules and can construct Hermite subdivision schemes of arbitrarily high smoothness from a convergent vector scheme of any arity.

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