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Luc Vinet* (vinet@crm.umontreal.ca) and **Alexei Zhedanov**. *A unified algebraic underpinning for the Hahn polynomials and rational functions.*

An algebra denoted $m\mathfrak{H}$ with three generators is introduced and shown to admit embeddings of the Hahn algebra and the rational Hahn algebra. It has a real version of the deformed Jordan plane as a subalgebra whose connection with Hahn polynomials is established. Representation bases corresponding to eigenvalue or generalized eigenvalue problems involving the generators are considered. Overlaps between these bases are shown to be bispectral orthogonal polynomials or biorthogonal rational functions thereby providing a unified description of these functions based on $m\mathfrak{H}$. Models in terms of differential and difference operators are used to identify explicitly the underlying special functions as Hahn polynomials and rational functions and to determine their characterizations. An embedding of $m\mathfrak{H}$ in $\mathcal{U}(\mathfrak{sl}_2)$ is presented. A Padé approximation table for the binomial function is obtained as a by-product. (Received September 14, 2020)