Solving reduced biquaternion tensor equations and applications

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We first develop an algorithm for computing the singular value decomposition (SVD) of a third-order reduced biquaternion tensor via a new Ht-product. As theoretical applications, we define the Moore-Penrose inverse of a third-order reduced biquaternion tensor and consider its characterizations via its SVD. Using Moore-Penrose inverses, we mainly discuss the general (or Hermitian) solutions to reduced biquaternion tensor equation $\mathcal{A} *_{Ht} \mathcal{X} = \mathcal{B}$ as well as its least-squares solutions. Finally, we develop two novel fast algorithms and apply them in color video compression and deblurring, both of which perform better than the compared algorithms, especially in CPU Time. This is a joint work with Cui-E Yu, Xin Liu, and Hui Luo.