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**Review text:**

Discrete linear Hamiltonian dynamical systems are currently being described by the so called symplectic linear algebraic equations. The paper complements the recent book by the same authors on this topic (quoted as ref. [7]) and demonstrates a number of analogies of the difference equations in question to the ordinary linear differential equation of the second order. Special attention is paid to the parallels to the so called reduction of order (a transition, in the continuous limit, to the first-order Riccati-type equation which becomes nonlinear and may be formally integrated in terms of a single available solution). In a preparatory step the authors introduce a discrete analog of primitive function. In its terms they achieve a unification of the separate forward and backward recurrence identities. Finally they discuss consequences of their observations for the so called recessive and dominant discrete solutions and for the theory of matrix continued fractions. Possible applications may be expected in game, control or filtering theory.