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INTEGRAL OPERATORS ACTING AS VARIABLES OF THE MATRIX POLYNOMIAL: APPLICATION TO SYSTEM OF INTEGRAL EQUATIONS

NIKTA SHAYANFAR[1], MAHMOUD HADIZADEH[1*] AND AMIR AMIRASLANI[2]

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ABSTRACT. The aim of this work is to clarify a new viewpoint of connection between system of integral equations and matrix polynomials. A procedure is described for transforming a linear system of integral equations to an independent system. The latter is converted to equalities by considering its equivalent matrix polynomial equation which employs the integral operator as its variable, and admits a normal form for simplifying the system. We will show that under certain suitable conditions, an independent reduced system is obtained, which can be shown to have the same unknowns as the main system, and has only one unknown in each equation. In fact, the basic idea enables us to develop a methodology to solve general systems of linear integral equations.

[1] DEPARTMENT OF MATHEMATICS, K. N. TOOSI UNIVERSITY OF TECHNOLOGY, P.O. BOX 16315-1618, TEHRAN, IRAN.
E-mail address: shayanfar@dena.kntu.ac.ir; hadizadeh@kntu.ac.ir

[2] STEM DEPARTMENT, UNIVERSITY OF HAWAII-MAUI COLLEGE, KAHULUI, HI 96732, USA.
E-mail address: aamirasl@hawaii.edu

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* Corresponding author.
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