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TWO CHARACTERIZATIONS OF INVERSE-POSITIVE MATRICES: THE HAWKINS-SIMON CONDITION AND THE LE CHATELIER-BRAUN PRINCIPLE*

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Dedicated to the late Professors David Hawkins and Hukukane Nikaido

Abstract. It is shown that (a weak version of) the Hawkins-Simon condition is satisfied by any real square matrix which is inverse-positive after a suitable permutation of columns or rows. One more characterization of inverse-positive matrices is given concerning the Le Chatelier-Braun principle. The proofs are all simple and elementary.

Key words. Hawkins-Simon condition, Inverse-positivity, Le Chatelier-Braun principle.

AMS subject classifications. 15A15, 15A48.

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