

On the Baksalary–Hauke condition aka the Rao–Mitra–Bhimasankaram relation

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Abstract

*I honor the great teachers and they live
in my work and they dance invisibly in the
margins of my prose.*

Donald Patrick Conroy to Barbra Streisand,
quoted from [5].

Jerzy K. Baksalary was one of Oskar Maria Baksalary's great teachers, likely the one. Oskar trusts that Jerzy lives in all his works (though he doubts Jerzy tries any dancing). A striking example of Oskar's work on which Jerzy had a tremendous impact is provided by paper [2], resulting from Oskar's collaboration with Dennis S. Bernstein. The problem considered therein is rooted in two prior articles, namely [1] written by Jerzy jointly with Jan Hauke and [4] co-authored by C. Radhakrishna Rao, Sujit Kumar Mitra, and P. Bhimasankaram. Both these papers pay attention to the identity of the form $KK^*K = KL^*K$, where K and L are complex matrices of the same size. The identity was in [3] called "the Baksalary–Hauke condition", whereas in [2] it was referred to as "the Rao–Mitra–Bhimasankaram relation". The talk, based on [2], will shed light on the properties of the identity, which deal inter alia with the notions of intransitivity, a well-known feature associated with several research areas, and strong antisymmetry, whose meaning was coined only in [2]. Various personal recollections concerned with Jerzy will be provided in the talk as well.

Keywords

Jerzy K. Baksalary (1944-2005), intransitivity, strong antisymmetry, matrix partial order.

References

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