



AE REGULARITY OF INTERVAL MATRICES*

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Abstract. Consider a linear system of equations with interval coefficients, and each interval coefficient is associated with either a universal or an existential quantifier. The AE solution set and AE solvability of the system is defined by $\forall\exists$ -quantification. The paper deals with the problem of what properties must the coefficient matrix have in order that there is guaranteed an existence of an AE solution. Based on this motivation, a concept of AE regularity is introduced, which implies that the AE solution set is nonempty and the system is AE solvable for every right-hand side. A characterization of AE regularity is discussed, and also various classes of matrices that are implicitly AE regular are investigated. Some of these classes are polynomially decidable, and therefore give an efficient way for checking AE regularity. Eventually, there are also stated open problems related to computational complexity and characterization of AE regularity.

Key words. Interval computation, Quantified systems, Linear equations, Interval systems.

AMS subject classifications. 65G40, 15Bxx, 65F30

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