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Avraham Goldstein* (avi_goldstein@netzero.net), BMCC / The City University of New York, 199 Chambers street, Room N770, New York, NY 10007, and **Chokri Cherif** (ccherif@bmcc.cuny.edu), BMCC / The City University of New York, 199 Chambers street, Room N532, New York, NY 10007. *Algebraic and Geometric Aspects of Stability of Linear Equations.*

In this joint work we present an interpretation of the meaning of sensitivity or stability in the matrix theory over the field of real numbers and investigate some Algebraic and Geometric aspects of this stability. To be more precise, we are interested to find necessary and sufficient conditions for a linear equation $A\vec{x} = \vec{b}$ so that perturbing A by an error E , which is bounded by some small positive bound e , will result in the change of the solution bounded by some small positive bound \vec{s} . In this work we focus on the low dimension cases. First we consider the simplest case $n = 1$. Then we progress to the case $n = 2$ which gives a good understanding of the interaction between the algebraic and the geometric approaches. For $n > 2$ computations become very cumbersome but the spirit of the analysis stays the same. (Received September 19, 2007)