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**Zaur Berkaliev\*** (berkaliev@iit.edu), 3424 S. State St., South, Room 4007, Department of Mathematics & Science Education, Illinois Institute of Technology, Chicago, IL 60616. *Chaos and Bifurcations in the Dynamical System of Student Attitudes toward Mathematics in Ten Undergraduate Classes.*

The paper addresses chaos and bifurcations as a new framework for understanding the dynamics of student attitudes toward mathematics (SATM). The study is based on a series of daily surveys repeatedly administered in 10 intensive undergraduate mathematics classes meeting up to 4 days a week with the total of 254 participants and 73 measured days throughout the entire semester. The resulting dynamics of SATM provided nonlinear chaotic patterns and demonstrated that these patterns might develop through bifurcations associated with such academic and demographic parameters as SAT/ACT math scores, GPA, course grade, number of math classes, gender, and beliefs about mathematics. In particular, the dynamics of confidence for the top versus bottom academic percentiles provided relatively less fluctuating and more stable dynamics when, for example, the standard deviation for the "course grade C or lower" category was 52% greater than for the "course grade B or higher" (at the same time, the gender differences in standard deviations reached 68%). Along with the power distribution of the corresponding difference time series, this suggests that the chaotic dynamics of SATM might be not a result of measurement error or noise but represent the very nature of such complex educational phenomena. (Received September 20, 2007)