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Rafail V. Abramov* (abramov@math.uic.edu), University of Illinois at Chicago, 851 S. Morgan st. (M/C 249), Chicago, IL 60607. *Suppression of chaos at slow variables by rapidly mixing fast dynamics.*

Chaotic multiscale dynamical systems are common in many areas of science, one of the examples being the interaction of the low-frequency dynamics in the atmosphere with the fast turbulent weather dynamics. One of the key questions about chaotic multiscale systems is how the fast dynamics affects chaos at the slow variables, and, therefore, impacts uncertainty and predictability of the slow dynamics. We demonstrate that the linear slow-fast coupling with the total energy conservation property promotes the suppression of chaos at the slow variables through the rapid mixing at the fast variables, both theoretically and through numerical simulations. (Received September 21, 2011)