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Kresimir Josic* (josic@math.uh.edu), Department of Mathematics, University of Houston, 4800 Calhoun Rd, Houston, TX 77204. *Analysis of synchronization in networks of weakly nonlinear oscillators using normal forms.*

Perturbation theory and asymptotic analysis play a fundamental role in applied mathematics and dynamical systems theory, and have been fundamental in the analysis of synchrony in networks of coupled oscillators. I will describe the method of normal forms and mathematical results about the validity of the approximations it provides. These results will then be applied to the analysis of various patterns of synchrony that can appear in a network of coupled weakly nonlinear systems such as van der Pol oscillators or Josephson junctions. (Received February 12, 2004)