1053-37-97 **Zin Arai** (arai@cris.hokudai.ac.jp), Japan Science and Technology Agency, Hokkaido University, Creative Research Initiative "Sousei", Sapporo, 001-0021, Japan, **William Kalies** (wkalies@fau.edu), Department of Mathematical Sciences, Florida Atlantic University, 777 Glades Rd, Boca Raton, FL 33431, **Hiroshi Kokubu** (kokubu@math.kyoto-u.ac.jp), Department of Mathematics, Kyoto University, Kyoto, 606-8502, Japan, **Konstantin Mischaikow*** (mischaik@math.rutgers.edu), Department of Mathematics and BioMaPS, Hill Center-Busch Campus, 110 Frelinghusen Rd, Piscataway, NJ 08854, **Hiroe Oka** (oka@rins.ryukoku.ac.jp), Department of Applied Mathematics and Informa, Faculty of Science and Technology, Ryukoku University, Seta, Otsu, 520-2194, Japan, and **Pawel Pilarczyk**, Centre of Mathematics, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal. *A Database Schema for the Analysis of Global Dynamics of Multiparameter Systems.*

A generally applicable, automatic method for the efficient computation of a database of global dynamics of a multi-parameter dynamical system is introduced. An outer approximation of the dynamics for each subset of the parameter range is computed using rigorous numerical methods and is represented by means of a directed graph. The dynamics is then decomposed into the recurrent and gradient-like parts by fast combinatorial algorithms and is classified via Morse decompositions. These Morse decompositions are compared at adjacent parameter sets via continuation to detect possible changes in the dynamics. The Conley index is used to study the structure of isolated invariant sets associated with the computed Morse decompositions and to detect the existence of certain types of dynamics. The power of the developed method is illustrated with an application to the two-dimensional, density-dependent, Leslie population model. (Received August 24, 2009)