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**Emily E Schaal\*** (eeschaal@email.wm.edu) and **Yu-Min Chung** (ychung@wm.edu). *Center Manifolds via Lyapunov-Perron.*

The Lyapunov-Perron (L-P) operator is a theoretical method used to show the existence of the invariant manifold. In 2005, M.S. Jolly and R. Rosa presented an algorithm for solving systems with center manifolds based on discretizing the L-P operator. However, this discretization can be difficult and expensive to implement. First, we provide detailed proofs for the construction of the center manifold by the L-P operator under the Jolly-Rosa framework. Second, we present an algorithm based on a boundary value formulation of the operator. Importantly, the algorithm is simple and can be adopted using any generic scheme, such as the Runge-Kutta methods. We implement the algorithm, test it with several examples, and discuss applications. (Received September 20, 2016)