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Efstathios G Charalampidis* (charalamp@math.umass.edu), Department of Mathematics and Statistics, Lederle Graduate Research Tower, University of Massachusetts, Amherst, MA 01003-9305. *"Multi-component nonlinear Schrödinger (NLS) systems: From theory to Numerical Computations.*

In this talk, we will present a two-component NLS system in various spatial dimensions. States that support a dark solitary wave in 1D (and its generalization in 2D) in the one-component will be considered, and we will explore the possibility of forming bright solitonic bound states in the second component. Bifurcation points are identified by studying the underlying linear limit numerically and (wherever possible) analytically. Then, nonlinear states are identified by employing a Newton-Raphson method and their stability is discussed. Finally, a new, yet powerful continuation method, called *deflated continuation*, will be discussed where results on its application to the NLS equation will be shown. (Received January 14, 2017)