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Annalisa Calini* (acalini@nsf.gov), Division of Mathematical Sciences, National Science Foundation, Arlington, VA 22230. *Linear stability of closed vortex filaments.*

I will describe a framework for studying the linear stability of periodic solutions of the Vortex Filament Equation (VFE), based on the Hasimoto correspondence between the VFE and the Nonlinear Schrödinger (NLS) equation, and on the construction of solutions of the linearized equations in terms of NLS squared eigenfunctions. I will derive criteria for instability of closed vortex filaments associated with periodic traveling wave solutions of the NLS, and provide a characterization of the linear instabilities of filaments associated with cnoidal NLS potentials, concluding that all knotted filaments in this class are linearly unstable. This talk is based on joint work with Scott Keith and Stephane Lafortune. (Received September 03, 2012)