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Nate Bottman* (natebottman@gmail.com), 6031 50th Avenue NE, Seattle, WA 98115-7703, and **Bernard Deconinck** (bernard@amath.washington.edu). *Analytically determining the spectra of stationary solutions of the focusing and defocusing NLS equations.*

Recent years have seen a lot of activity around the stability analysis of stationary periodic solutions of nonlinear partial differential equations. We propose a new method for analytically determining the spectral stability of such solutions of integrable equations. This method relies on the squared-eigenfunction connection between the linearized problem and the Lax pair of the integrable equation, so often used in the soliton case. We present complete determinations of the spectra of stationary periodic solutions of the 1-D defocusing and focusing nonlinear Schrödinger equations with cubic nonlinearity. (Received August 09, 2008)