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**Peter D. Miller\*** ([millerpd@umich.edu](mailto:millerpd@umich.edu)). *Modulational stability properties of periodic traveling waves in Klein-Gordon equations.*

For a wide class of potentials modeled on the sine-Gordon potential  $V(u) = -\cos(u)$ , the nonlinear Klein-Gordon equation  $u_{tt} - u_{xx} + V'(u) = 0$  admits four types of periodic traveling wave solutions: they can propagate at subluminal or superluminal speeds and they can be waves of librational or rotational type. We consider the linearized stability of such waves, paying particular attention to the possibility of unstable spectrum near the origin, the hallmark of so-called modulational instability. We describe an index detecting modulational instability, and we relate it to other notions of modulational instability arising from Whitham's fully nonlinear wave modulation theory as well as the weakly nonlinear theory of slowly-varying wave envelopes described by a cubic nonlinear Schrödinger equation. This is joint work with Chris Jones, Robert Marangell, and Ramón Plaza. (Received January 22, 2014)