1110-35-48   **Alberto Bressan** and **Tao Huang*** (`txh35@psu.edu`), Department of Mathematics, Penn State University, University Park, PA 16802. *Representation of Dissipative Solutions to a Nonlinear Variational Wave Equation.*

We introduces a new way to construct dissipative solutions to a second order variational wave equation. By a variable transformation, from the nonlinear PDE one obtains a semilinear hyperbolic system with sources. In contrast with the conservative case, here the source terms are discontinuous and the discontinuities are not always crossed transversally. Solutions to the semilinear system are obtained by an approximation argument, relying on Kolmogorov's compactness theorem. Reverting to the original variables, one recovers a solution to the nonlinear wave equation where the total energy is a monotone decreasing function of time. (Received February 03, 2015)