1113-35-272 **Justin T Webster*** (websterj@cofc.edu), 66 GEORGE ST, Charleston, SC 29424, and **Pelin G Geredeli**, Ankara. *Nonlinear Plates with Boundary Dissipation: Contrasting Berger versus von Karman.*

The dynamics of the nonlinear Berger plate, in the absence of rotational inertia are considered. We consider boundary damping in free plate boundary conditions, and hinged boundary conditions—where the structure of the nonlinearity gives rise to complicating boundary terms in the analysis (not found for von Karman dynamics).

In the case of dissipation acting through free boundary conditions, we obtain well-posedness through the use of highly nonlinear boundary damping (to accommodate non-dissipative, nonlinear terms in the energy relation).

We also show the existence of a compact global attractor for the dynamics in the presence of hinged boundary dissipation (assuming a star-shaped, star-complemented condition). We explicitly construct the absorbing set for the dynamics by employing energy methods that exploit the specific structure of the Berger nonlinearity. We critically utilize sharp trace results for the Euler-Bernoulli plate.

Our results provide a parallel mathematical commentary to Berger versus von Karman modeling: we discuss the validity and applicability of the Berger approximation, which we believe to be of broad value across engineering and applied mathematics communities. (Received August 24, 2015)