

1077-VG-1951 **Joe Latulippe*** (jlatulip@norwich.edu), Mathematics Department, Norwich University, 158 Harmon Dr., Northfield, VT 05663, and **Randy Sierra**. *Modeling Wrist Oscillations Using Perturbation Methods*. Preliminary report.

Wrist dislocations often occur from the tearing of ligaments in the wrist. In order for the wrist to heal, surgery is often performed. During the postoperative healing process the repaired ligament will stretch causing the range of motion of the wrist to vary with time. To better understand the recovery process, a mathematical model that treats the wrist as an oscillator is developed. A corresponding weakly nonlinear differential equation is investigated using perturbation methods. To find a leading order approximation, a multiple scales procedure is used. Under different parameter regimes, the model predicts different recovery scenarios. (Received September 21, 2011)