

Abstract Submitted
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Brain Displacement NOAH WHITAKER, PAUL WALTER, St. Edward's University — During an impact, the brain experiences displacement in relation to the skull. Using MRIs, Feng et al. (2010) reported on the translational and angular displacements of the brain relative to the skull of three human subjects undergoing mild impulses. Our initial efforts to model the brain-skull system treat the brain as a rigid body with four springs attaching it to the skull at 45 angles as described by Zou (2007). We construct the initial value problem using the MRI data as initial data. We then model the system by evolving three second-order (six first-order) nonhomogenous differential equations using the Runge-Kutta method. Conducting chi-squared analyses comparing model predictions with the MRI data constrains our model's parameters, i.e., spring constants and damping coefficients.

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