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Diane Bootz
Illinois Wesleyan University

George Kambouroglou
Illinois Wesleyan University

Kevin Sonntag
Illinois Wesleyan University

Narendra Jaggi, Faculty Advisor
Illinois Wesleyan University

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Diane Bootz, George Kambouroglou, and Kevin Sonntag
Department of Physics, IWU, Narendra Jaggi*

Many undergraduate physics textbooks show that the gravitational field (**g**) DECREASES linearly as one moves from the surface to the center of the spherical earth. Experiments, however, have demonstrated that there is an initial INCREASE in **g** as one moves down in a mine shaft. A model of the earth was constructed to understand this discrepancy. The model consists of concentric spherical shells of different densities. The gravitational field is determined as a function of the radius. Instead of decreasing monotonically as the uniform density model predicts, the multiple shell model predicts that **g** first increases to a maximum beneath the surface before linearly decreasing. This result is in pleasant agreement with the experimental data.