1016-82-144 **Eric W Kuennen*** (kuennene@uwosh.edu), University of Wisconsin Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901. *A Radial Continuum Equation for Three-dimensional Rough Surface Growth.*

A large variety of phenomena are associated with rough surface propagation, e.g. fluid flow in a porous medium, colloid aggregation, electron deposition, and bacterial growth. The most widely studied continuum model for rough surface propagation is the KPZ equation, a stochastic nonlinear PDE. In two dimensions, the self-affine scaling of the equation is well-known, and the large group of discrete models and physical phenomena that share these scaling properties are known as the KPZ universality class. However, the growth behavior of the 3D KPZ equation is less well understood. The matter of determining which growth phenomena belong to the KPZ universality class in three dimensions is an important unsolved problem in statistical physics.

In this paper, a stochastic nonlinear partial differential equation for 3D surface growth is proposed in a new radial geometry. The equation reduces to the KPZ equation in the large radius limit. The equation is analyzed numerically and the growth exponent is estimated. Two distinct scaling regimes are discovered. These results are used to discuss whether the radial continuum equation belongs to the 3D KPZ universality class. (Received February 09, 2006)