1135-35-2252 **David M Ambrose** and **Gideon Simpson*** (grs53@drexel.edu), Department of Mathematics, Korman Center, 33rd & Market Streets, Philadelphia, PA 19104, and **J Douglas Wright** and **Dennis G Yang**. *Existence theory for magma equations in dimension two and higher.*

We examine a degenerate, dispersive, nonlinear wave equation related to the evolution of partially molten rock in dimensions two and higher. This simplified model, for a scalar field capturing the melt fraction by volume, has been studied by direct numerical simulation where it has been observed to develop stable solitary waves. In this work, we prove local in time well-posedness results for the time dependent equation, on both the whole space and the torus, for dimensions two and higher. We also prove the existence of the solitary wave solutions in dimensions two and higher. (Received September 25, 2017)