# Global Existence of Weak Solutions to An IBVP of a Phase-Field Model for Motion of Grain Boundaries

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We shall prove global existence of weak solutions to an initial-boundary value problem for a novel phase-field model which is an elliptic-parabolic coupled system. This model is proposed as an attempt to describe the motion of grain boundaries, a type of interface motion by interface diffusion driven by bulk free energy in elastically deformable solids. Its applications include important processes arising in Materials science, e.g., Sintering. In this model the evolution equation for an order parameter is a non-uniformly, degenerate parabolic equation of fourth order, which differs from the Cahn-Hilliard equation by a non-smooth term of the gradient of the unknown.