

Phase change with voids and bubbles

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In this talk we present a result obtained in collaboration with Michel Frémond (Laboratoire Central des Ponts et Chaussées, Paris, France) concerning a phase transition model in which is included the possibility of having voids during the phase change. When looking at frozen ice or cast iron one may see bubbles or voids, they appeared during the water or the melted metal solidification. This aspect is described in the model by the mass balance equation whose effects are included by means of the pressure of the system in the dynamical relations. We present here a well-posedness result for the PDE system associated with the model for a two phase system. Finally, we also discuss the possibility of having voids in the thermo-mechanical evolution of shape memory alloys.