

Abstract Submitted
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Modeling of cathodic arcs with liquid-metal cathodes¹ DMITRY LEVKO, ROBERT ARSLANBEKOV, VLADIMIR KOLOBOV, CFD Research — The results of modeling of arc ignition above the liquid metal InGa as well as copper cathodes will be presented. The effect of gas pressure on micro-protrusions explosion will be discussed. It will be shown that the micro-protrusion explosion passes through several stages: 1) fast heating and melting which is accompanied by the metal-to-liquid phase transition; 2) extremely fast liquid-to-non-ideal plasma phase transition; and 3) expansion of non-ideal plasma into vacuum. All these stages will be captured in our model which is based on the solution of compressible Navier-Stokes equation coupled with the Equation of State (EOS) for non-ideal plasma. This EOS also describes other copper states (solid, liquid, and ideal gas).

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