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**Numerical Simulation of Energy Conversion Mechanism in Electric Explosion** WANG WANJUN, LV JUNJUN, ZHU MINGSHUI, FU QIUBO, Institute of Chemical Materials, China Academy of Engineering Physics, EFIS INTEGRATION R&D GROUP TEAM — Electric explosion happens when micron-scale metal films such as copper film is stimulated by short-time current pulse, while generating high temperature and high pressure plasma. The expansion process of the plasma plays an important role in the study of the generation of shock waves and the study of the EOS of matter under high pressure. In this paper, the electric explosion process is divided into two stages: the energy deposition stage and the quasi-isentropic expansion stage, and a dynamic EOS of plasma considering the energy replenishment is established. On this basis, flyer driven by plasma is studied numerically, the pressure and the internal energy of plasma in the energy deposition stage and the quasi - isentropic expansion stage are obtained by comparing the velocity history of the flyer with the experimental results. An energy conversion model is established, and the energy conversion efficiency of each process is obtained, and the influence of impedance matching relationship between flyer and metal plasma on the energy conversion efficiency is proposed in this paper.

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