## Abstract Submitted for the SHOCK13 Meeting of The American Physical Society

The Experimental Researching on Cylindrical Isentropic Compression by Ultrahigh Magnetic Field. ZHUOWEI GU, HAO LUO, HENGDI ZHANG, SHICHAO ZHAO, XIAOSONG TANG, YANJIN TONG, ZHENFEI SONG, FULI TAN, JIANHENG ZHAO, CHENGWEI SUN, Institute of Fliuid Physics, Chinese Academy of Engineering Physics, INSTITUTE OF FLIUID PHYSICS, CHINESE ACADEMY OF ENGINEERING PHYSICS TEAM — The cylindrical isentropic compression by ultrahigh magnetic field (MC-1) is a kind of unique high energy density technique. It has characters like ultrahigh pressure and low temperature rising, and would have widely used in areas like high pressure physics, new material synthesis and ultrahigh magnetic field physics. The Institute of Fluid Physics, Chinese Academy of Engineering Physics (IFP, CAEP) has begun the experiment since 2011 and a primary experimental device had been set-up. In the experiments, a seed magnetic field of 5 Tesla were set-up first and compressed by a stainless steel liner which is driven by synchronous initiated high explosive. The internal diameter of the liner is 97 mm, and its thickness is 1.5 mm. The movement of liner was recorded optically and a typical turning-around character was observed. From the photograph results the liner was compressed smoothly and evenly and its average velocity was about 5-6 km/s. In the experiment a maximum axial magnetic field of 540 Tesla has been recorded and its response magnetic pressure is more than 100 GPa. The MC-1 process was numerical simulated by 1D MHD code MC11D and the simulations are in accord with the experiments. The isentropic compression of some gas materials were also numerical simulated and some valuable results were obtained and discussed.

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