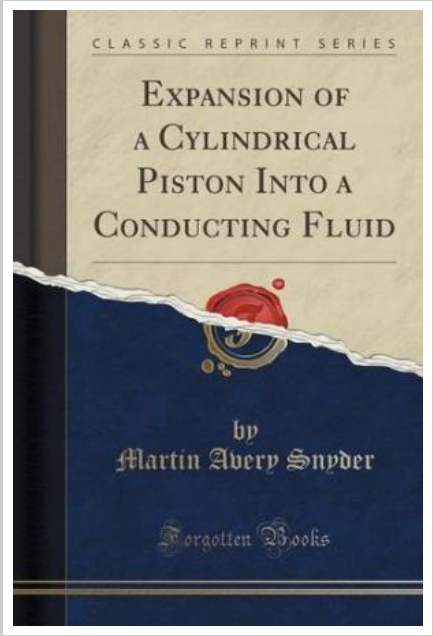


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Expansion of a Cylindrical Piston Into a Conducting Fluid (Classic Reprint) (Paperback)

By Martin Avery Snyder

Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Expansion of a Cylindrical Piston Into a Conducting Fluid The linearized expansion of an infinitely long cylindrical piston into a conducting fluid is considered. The surface of the piston is assumed to be a perfect conductor. The fluid is assumed to be a perfect compressible fluid (free from viscosity and heat conduction) and a perfect electrical conductor, permeated by a uniform magnetic field. Conical solutions of the linearized Lundquist equations are obtained by an extension of the conical plane wave method first introduced by Gardner. In general, the solution involves both real and complex characteristics. In the course of the analysis, the correct way to handle such coupled problems is elucidated. We consider two sorts of problems: slow expansions of pistons with roughly circular cross-section, and finite-speed expansions of thin pistons. The linearized problem appears to be a faithful model of the nonlinear problem only in the latter case, i.e., only for pistons whose cross-section is nearly parallel to the undisturbed magnetic field. In other cases, the presence of a magnetic boundary layer is suggested....

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