

SATURDAY MORNING, 15 NOVEMBER 1969

GOLDEN STATE ROOM AT 9:00 A.M.

(C. F. KENNEL presiding)

## 9A. Shock Waves

9A2. Plasma Wind Tunnel for Collisionless Shock Wave Studies.\* D. L. MORSE and W. DESTLER, Lab. of Plasma Studies, Cornell University.--A plasma wind tunnel facility<sup>1</sup>, similar to that described by Pugh and Patrick<sup>2</sup>, is used to produce a super-Alfvénic flow of plasma over a magnetic obstacle for times approaching one millisecond. The flowing plasma has a density greater than  $2 \times 10^{13} \text{ cm}^{-3}$  on axis, and the density has decreased to one-half the peak value at a radius greater than 25 cm. The magnetic field embedded in the plasma stream is primarily axial, and less than 30 gauss in magnitude. The magnetic field of the obstacle is essentially that of a single current-carrying conductor located on a diameter of the plasma stream cross section. The field of the obstacle is distorted by the plasma flow, and a shock wave forms in front of the obstacle. The properties of the wave have been investigated and will be discussed.

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<sup>1</sup>W. Condit, Bull. Am. Phys. Soc., Series II, Vol. 13, p. 1560 (1968).

<sup>2</sup>E. Pugh and R. Patrick, Phys. Fluids 10, 2579 (1967).