

## ABOUT SHOCK WAVE TRANSITION PHENOMENA IN NON-STATIONARY FLOWS

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Recent results about shock wave transition from regular reflection (RR) to Mach reflection (MR) in a non-stationary flow over a curved obstacle (i.e. in a flow which cannot be made pseudosteady by an appropriate frame) indicate a pronounced discrepancy from the analogous process taking place in a steady flow. This is substantiated in the paper quoted by measuring the transition angles of RR to MR during the interaction phase of shock waves with a 40mm dia half-cylinder. A streak technique was used in connection with curved slits. In an earlier paper these transition angles were measured, the interaction phase, however, being photographed using Cranz-Schardin multiple spark camera. Here the transition angles were found by tracing the triple point line, taken from the shadowgraphs, back onto the body surface. A corresponding procedure was applied by Bleakney and Taub when they studied the problem in the case of flat wedges. The phenomenon RR to MR in a non-stationary flow cannot be explained by existing concepts.

It is found now that both evaluation methods yields values agreeing well within the experimental error. In the paper to be given, the transition angles measured at various elliptical cylinders after the second evaluation method are presented and compared with the ones mentioned above. Furthermore the transition process is studied by analyzing shadowgraphs of the shock wave interaction with regular polygons having central angles of 30, 22.5 and 18 degree resp. With the aid of such profiles the details can be shown of what happens at the steadily curved shape of a circular cylinder.