Reply by Authors to G A Greenbaum

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OUR suggested "simple-minded" procedure for handling pole conditions has indeed been improved upon by Greenbaum, and, in addition, he has corrected an outright error; we agree that it is quite wrong to state that $m_\xi = 0$ for $n = 2$

We agree, too, that the pole conditions can and should be imposed right at the pole instead of a short distance away Some alternatives to Greenbaum's recommended conditions then suggest themselves; purely on the basis of symmetry and antisymmetry, we could state that

$$u_\xi = u_\theta = w' = m_\xi' = 0 \qquad \text{for } n \text{ even}$$
$$u_\xi' = u_\theta' = w = m_\xi = 0 \qquad \text{for } n \text{ odd}$$

But it might be better to adopt conditions that involve as little differentiation as possible of the four basic independent variables; such conditions would be

$$u_\xi = u_\theta = w' = w_\xi' = 0 \qquad \text{for } n = 0$$
$$u_\xi' = u_\xi + u_\theta = w = m_\xi = 0 \qquad \text{for } n = 1$$
$$u_\xi = u_\theta = w = w' = 0 \qquad \text{for } n = 2$$
$$u_\xi = u_\theta = w = m_\xi = 0 \qquad \text{for } n \geq 3$$

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Comment on "Solid Propellant Driven Shock Tube"

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ROSCISZEWSKI[1] has proposed a "solid-propellant"-driven shock tube He has, however, used the equations of detonation theory and thereby implies a detonable propellant, i e , a solid explosive Thus the tube might be more properly described as a solid-explosive-driven shock tube

In describing the role of the gas-solid "explosive" interface as a diaphragm, Rosciszewski suggests a nonporous solid, not a granular one Common high explosives in this compacted form exhibit detonation pressures of 3 to 5 $\times$ 10^6 psi New experimental explosive compositions of nitropolyurethane/PETN, 90/10, and of polyurethane/PbN_6, 40/60, with approximate detonation pressures as low as 3 7 $\times$ 10^5 and 1 5 $\times$ 10^5 psi, respectively, have been reported [2] The efficiency of such explosives in producing the product gases required of a driver will probably be found poor More important, however, it is dubious that the walls of a shock tube in direct contact with the detonating explosives can withstand exposure to detonation pressures even as unusually low as these; metal tubes are deformed and fractured at comparably low pressures generated by the detonation of granular explosive charges

However, several techniques may be used which permit the use of solid high explosives as drivers of shock tubes These are based on the experience of the author with the use of solid high explosives to drive a conical or spherical sector shock tube for the purpose of producing a spherical high-explosive blast wave within the confines of a shock tube [3-5]

In one, the firing block wall is made thick enough so that it deforms without rupturing Replacement of the block on each shot is usually necessary In another method, adequate space (four to six charge diameters) is maintained between the explosive and the container surfaces by supporting the explosive with material of very low density such as rigid plastic foam Repeated firing without deformation is thus possible at the price of some initial irregularity in the flow

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