International Journal of Scientific Research in Science, Engineering and Technology
© 2017 IJSRSET | Volume 3 | Issue 8 | Print ISSN: 2395-1990 | Online ISSN : 2394-4099

# Cylinderical and Spherical Hydromagnetic Shock Waves in Real Gas Atmosphere

Prabha, Garima Singh, Suman Lata, R .P. Yadav
Govt Raza PG College, Rampur (UP)

**Review of literature** - Shock waves research has become one of the most interesting topics of science and technology, now a days. It has applications in different branches of science, such as Astrophysics, Geophysics, Supersonic flights, Explosions, Plasma Physics, Aeronautics, Mechanical Engineering, and Medicines etc. We experience shocks in lighting strokes and in sonic booms. In space, they are even more common; solar wind and more.

Shock waves are high energy, extremely fast, pressure pulses. Even if shock waves have different properties than sound or ultrasound, they obey similar physical laws. As with sound, it is not possible to see shock waves; however, we can hear and feel them, whenever a plane breaks the sound barrier, it generates a shock wave, which we perceive as a sound similar to that of an explosion. Other phenomenon may generate such pulse as well; explosives, thunderstorms or electric discharge can all produce shock waves.

Physically speaking, a shock phenomenon may be described as an irreversible process of energy losses and thermal heating of gases. Shock waves is not a wave of periodic type like
ordinary sound, but consists of a single transient pulse. The boundary surface of this pulse is called shock waves, while whole pulse region is referring to as a blast wave. Recently much attention has been paid to study the various aspect of shock waves.

The problem of shock waves propagation have received attention of researchers in recent years as a consequence of increasing speed of bodies through that atmosphere. Shock propagation in non-uniform media is influenced both by the non-uniform, ahead of the shock and also by the wave which overtakes the shock .Yousat (1974) and Chisnell and Yousat (1984) have used similarity solution to effect of overtaking disturbances (EOD) on shock waves moving in non-uniform medium. Yadav et al. (1994) have discussed the EOD on the problem of propagation for the motion of diverging shock waves in rotating gas, using Chester – Chisnell – whitham (CCW) method. Correction to CCW Predictions for the motion of diverging shock waves in magnetogasdynamics have been discussed by Kumar and Rana (2001). Singh (2002) has studied EOD on the motion of spherical converging shock waves through rotating ideal gas. Recently, neglecting the EOD, the propagation of spherical converging shock waves in self-gravitating gas has been analysed by Yadav and Gangwar (2003). Very recently Rana et al (2015) studies the plane hydromagnetic shock wave through uniform and non uniform media.

Almost all the authors have studied the EOD on diverging or converging shock wave propagation in ideal gases. When the flow takes place at high temperature, the assumption of ideal gases are no longer valid. The problem of the freely propagation of strong shock waves in non ideal gas has been tackled by Ojha and Tiwari ( 1993). Ramu et al., (2016) investigate the behaviour and impact on the shock wave propagation by energy input and b(q/q0), the measure of shock strength, and the spherical and cylindrical situations were worked out in detail using the presented McQueen and Royce Equations of State (EOS), with appropriate material constants. It appears that the shock front's speed does not automatically drop with rising b(q/q0), but rather the pressure and velocity overdue the shock front rapidly rises in the existence of the MF and then gradually decline to a constant value.

The data was presented in tables and graphs for easier comprehension. The effects of a strong MF on the flow variables and the associated energy were therefore discussed.

Sahu et al., (2017) planned that when a non-ideal dusty rotating gas was exposed to the influence of rising monochromatic radiation, a circular shock wave can be shown to propagate. Fluid velocity changes in both axial and azimuthal directions. It was expected to have a continuous distribution of minor solid particles because the dusty gas was supposed to have a mix of non-ideal gas and tiny solid materials in the gas. According to the findings of the experiment, the flow parameters and the shock strength were influenced in opposite ways by the piston velocity index and the radiation parameter.

Since the motion of shock waves in real gases is closed to actual situation, therefore to propagation of cylindrical and spherical shock wave in real gases is closed to actual situation, therefore the propagation of cylindrical and spherical shock wave in real gases is important to study.

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