

The GW saturation and momentum release

Susumu Kato[1]

[1] none

<http://www.sgepss.org/>

The saturation of GW is an interesting subject but its understanding is, as yet, fairly rudimentary, mainly because the subject concerns non-linear effects. The saturation occurs for a monochromatic GW traveling upwards (from the lower atmosphere) due to two effects; one is the linear effect for amplifying the GW amplitude with heights and the other is the non-linear effect for impeding the amplification. Initially, the non-linear effect is weak and, eventually, it becomes stronger with heights. Then, at certain height the linear and non-linear effects become balanced reaching the saturation. It is found that the saturation velocity amplitude is equal to the phase velocity of the GW. The saturation implies a GW collapse giving rise to break the GW thereby releasing the GW momentum to the ambient atmosphere. Thus, the saturation would cause new GWs, instabilities, turbulence to be produced. Certain newly -born GW may travel further upwards to the thermosphere. We attempt to discuss how to understand the saturation and its behavior. Our present work may interpret well the GW saturation spectrum observed by radars