STUDY OF THE MECHANISM FOR SOLAR WIND FORMATION

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This paper analyses the observations in the corona and solar wind and compares them with generalized results, derived from laboratory-scale experiments to show that a major contribution to a precipitating plasma of the solar wind that emanates from coronal holes, may be made by a thermal pressure gradient. It is found that the divergence $\Phi = \left(\frac{R}{R_\odot}\right)^2 f$ of magnetic field lines, originating from coronal holes, is one of the factors, governing the solar wind velocity v at earth orbit ($R = 1AU$). A decrease in velocity $v_{R=1AU}$ from $\simeq$ 750 km s^{-1} down to $\simeq$ 450 km s^{-1} may be attributable to an increase in superradial divergence f from $\simeq$ 7 - 9 to $\simeq$ 20. The plasma energy flux density F at the base of coronal holes which represent the sources of a solar wind with $v_{R=1AE}$=(450 to 750)km s^{-1}, remains nearly constant, being $F \simeq (1.4 \pm 0.3)\cdot 10^6 \cdot erg \cdot cm^{-2} \cdot s^{-1}$ for the period 1973-1975.