FINE STRUCTURE AND DYNAMICS OF THE INNER CORONA

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High spectral (0,05 Å) and spatial (≃ 1000 km) resolution spectra of the Fe XII line 1349.4 Å reveal the existence of coronal fine structures in the quiet sun against the solar disk. These coronal bright elements have an average size of 2000-3000 km; their column density can be 3×10^{17} cm^{-2} . In the quiet sun, outward streaming velocities of 10-15 km sec^{-1} can be measured by means of the Doppler effect. The total kinetic and thermal energy of the outstreaming gas can be estimated to be larger than 1×10^{5} ergs cm^{-2} sec^{-1}, enough to account for the heating of the corona and the losses of the solar wind. At the outer limb ($\cos \theta \simeq 0.1$) line profiles show a strong blue asymmetry, which could be caused by expanding material in a piston-driven shock, whereby the opaque, cool piston causes the asymmetry of the line profile.

In active regions over plages a red-shifted component (-5 to -10 km sec^{-1}) can be isolated from the line profiles, indicating downward-moving coronal material. Over a sunspot, coronal material is outstreaming with a velocity of 5 km sec^{-1}

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