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demonstrated that cross-field drift can substantially affect trajectories of energetic electrons, and the locations where energetic electrons reach the chromosphere, producing HXR footpoint sources. This effect is particularly significant for particles moving in the vicinity of reconnecting current sheets. We conclude that magnetic connectivity alone cannot be used to predict the location of HXR footpoint sources, and, therefore, as a minimum, test-particle models of energetic electron kinetics must include the parallel motion and the ExB drift.

Dependence of strong magnetic field measurements in the solar atmosphere on the techniques used

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Strong magnetic magnetic fields in the solar atmosphere are most reliably measured by the Zeeman effect when the filling factor is close to unity and the magnetic splitting of the spectral components of the magnetosensitive line is complete. The latter is called the strong field regime in solar magnetometry. In fact, this mode can be observed only at the level of the photosphere, in sunspots, and in lines with large Lande factors. For measurements in the chromosphere and especially the solar corona, it is necessary to use another mode, a weak field approximation (WFA), in which the visible Zeeman splitting is much smaller than the observed half-width of the spectral line. In this case, when the filling factor is close to unity, the longitudinal component of the magnetic field is measured, and when it is small, in the first approximation, the product of the local field by the filling factor is measured. Obtaining the actual field values in this case is quite difficult and not always unambiguous. One of the methods used by the authors is based on the analysis of the shape of the profile bisectors (see, e.g., https://link.springer.com/article/10.3103/S0884591323050070). This method sometimes leads to field values that are even greater than those observed in sunspots by the direct method. The reality and the upper limit of local fields with this approach represent an understudied problem. In the report, we plan to provide and discuss some specific details in this problem.