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Electron acceleration by the reconnection outflow shock during solar flares

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During solar flares a large amount of nonthermal elctromagnetic radiation from the radio up to the $\gamma-$ray range is emitted from the corona implying the generation of energetic electrons. Within the framework of the magnetic reconnection scenario, jets appear in the outflow region of the reconnection site and can establish standing fast-magnetosonic shocks if they penetrate with a super-Alfvénic speed into the surrounding plasma. These shocks can be the source of energetic electrons. During the solar event on October 28, 2003 an enhanced flux of hard X$-$ and $\gamma-$rays up to an energy of 10 MeV has been recorded by the instruments aboard the INTEGRAL spacecraft indicating the generation of relativistic electrons. The radio signature of a standing shock wave appeared simultaneously with the enhanced hard X$-$ and $\gamma-$ray fluxes. Here, this shock is assumed to be the source of highly energetic electrons, which produce the observed hard X$-$ and $\gamma-$ray fluxes. They are energized by shock drift acceleration, which is necessarily treated in a fully relativistic manner. After the acceleration, the electronstravel from the reconnection site in the corona along the magnetic field lines towards the denser chromosphere, where they emit the observed hard X$-$ and $\gamma-$ray radiation via bremsstrahlung. The theoretical obtained results will be compared with the observations for the event on October 28, 2003.