Study of electron propagation in the corona with LOFAR

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During solar flares large numbers of electrons with energies greater than 20 keV are generated with typical production rates of 10^{36}/s. Some of them are able to propagate through the corona into interplanetary space along open magnetic field lines. On their way they emit radio radiation in the frequency range from a few 100 MHz down to 10 kHz. Such radio signals are observable as type III radio bursts e.g. by the WAVES radio spectrometer of the WIND satellite and by the ground base interferometer LOFAR. From the frequency drift rates of dynamic radio spectra the radial propagation velocity Vr of the electrons is derived by employing a newly developed density model of the heliosphere. Calculations show that the radio emission is produced by electrons with different Vr and therefore by different electrons of the initial electron distribution. Since LOFAR can also spatially resolve electron propagation in the corona it can help to improve our model. Therefore the first LOFAR observations of type III radio bursts are discussed in this respect and consequences for the observability of type III burst in other stellarspheres are considered.