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Modeling and simulation of synchrotron emission by relativistic runaway electrons DIEGO DEL-CASTILLO-NEGRETE, Oak Ridge National Laboratory, LEOPOLDO CARBAJAL, Universidad Nacional Autonoma de Mexico, MARK CIANCIOSA, Oak Ridge National Laboratory — High-energy relativistic runaway electrons (RE) can be produced during magnetic disruptions due to the strong electric fields generated during the thermal and current quench of the plasma. Understanding this problem is key for the safe operation of ITER because, if not avoided or mitigated, RE can severely damage the plasma facing components. The accurate modeling and simulation of the synchrotron emission (SE) by RE is critical because it provides a limiting mechanism for the maximum energy that RE can reach, and also because it can be used as an experimental diagnostic to infer RE parameters including energy and pitch-angle distributions. Here we report recent results on SE taking into account full-orbit effects and the details of the camera geometry using KORC (Kinetic Orbit Runaway electrons Code). Of particular interest is to study the dependence of the SE spatial distribution and power spectrum on different models of the RE energy and pitch angle distributions. The study is done for both "visible" and infrared emission.

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