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Growth Rate of Knock-on Runaway Electron Generation in Tokamaks[1] S.C. CHIU, V.S. CHAN, General Atomics, M.N. ROSENBLUTH, ITER JCT, San Diego, R.W. HARVEY, CompX — The ability to tolerate disruptions is an important issue for high current tokamaks. To minimize the electro-mechanical stresses that can be produced during current quench in a disruption, it has been proposed to inject killer pellets to quench the plasma thermally and thus allow a rapid current decay. A serious concern is that a high electric field will develop which could produce long-lived runaway electrons. Specifically, knock-on collisions can cause an avalanche of runaways. The key quantities in such an event are the growth rates of the avalanche and the energy spectrum of the runaways. Previous works[2],[3] have used the approximation that the runaway distribution generating the knock-on's have zero pitch angle when calculating the knock-on source. Here, we abandon this approximation and use the actual electron distribution to calculate the knock-on source. Using the bounce-averaged Fokker-Planck code CQL3D, the growth rates and energy spectrum of runaways are calculated and compared with previous results.

[1]Work supported by U.S. DOE Grant DE-FG03-95ER54309.
[2]M.N. Rosenbluth, A. Putvinski, submitted to Nuclear Fusion (1997).
[3]S.C. Chiu *et al.*, oral talk, Sherwood Meeting, Madison, Wisc. (1997).

☐ Prefer Oral Session
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