Abstract Submitted
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Whistler waves driven by runaway electrons have been observed on the Madison Symmetric Torus (MST) tokamak plasma.[1] A. F. ALMAGRI, B. E. CHAPMAN, N. C. HURST, S. OLIVA, A. S. SQUITIERI, P. VAN METER, P. WILHITE, C. B. FOREST, UW-Madison — Whistler waves driven by mildly relativistic runaway in tokamak discharges have been observed in MST. The waves are detected with high frequency insertable magnetic probe and the runaway electrons are monitored with high time resolution x-ray detector. The probe consists of two poloidal and two toroidal single turn coil. The two poloidal coils and the two toroidal coils are re separated by 4 mm. The probe signals are digitized at 5 GHz. The target Plasma has a toroidal field of 1.38 kG and 64 kA for plasma current. Plasma density scanned from 0.007x10^{13} to 0.4x10^{13} cm^{-3}. For these plasmas, the edge safety factor is 1.8, f_{ce} =2.5 GHz, and f_{ci} =1 MHz. At density of 0.007x10^{13} cm^{-3}, discrete magnetic fluctuation lines appear at many frequencies. The lowest line appears at $12f_{ci}$. Higher frequency lines observed in MST plasma may be due to improved coupling to the wave. These discrete frequency lines decrease in amplitude as the plasma density is increased. A spectrogram of the magnetic fluctuations show a band like structure. These bands of discrete frequencies are totally absent at plasma density of 0.4x10^{13} cm^{-3}. The two poloidal coils are used to estimate the perpendicular wave number. At the 12 MHz , at 22 MHZ , and at about 60 MHz . X-ray pulses from 3 keV up to 30 keV where detected in a perpendicular chord. Spectrogram of the x-ray pulses shows band like structure similar to the magnetic fluctuations. These results will be presented and results of the parallel wave numbers will be shown as well.

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