THERMAL & NON-THERMAL
SUBMILLIMETRE EMISSION
FROM ALCATOR TOKAMAK

by
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ABSTRACT

An experimental investigation was undertaken of submillimetre
radiation from The Alcator Tokamak.

Thermal emission at the cyclotron frequencies was used to
determine spatial electron temperature distributions. Measurements of
temperature profiles corroborated classical models of plasma
electrical conductivity, and provided graphic displays of unusual
discharge behaviour. Temperature fluctuations, such as sawteeth, were
also investigated.

Non-thermal radiation was observed at the electron plasma
frequency, and occurred in two distinct fashions; a steady broadband
feature, and a fluctuating emission of very narrow bandwidth. The
fluctuating emission has not been previously documented from Tokamak
plasmas. Pertinent theoretical considerations are outlined.

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