

# Physics Colloquium

“Quasi-symmetry in magnetic fusion energy confinement devices”

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Friday 22 January 2010  
4:10 – 5 pm  
**EPS 108**

Quasi-symmetry in three-dimensional magnetic confinement devices provides a path for external control of the confining magnetic field while achieving confinement comparable to axisymmetric configurations. In a quasi-symmetric toroidal configuration, magnetic field strength in magnetic flux coordinates depends primarily on two coordinates,  $B(\psi, \theta, \zeta) \sim B(\psi, M\theta - N\zeta)$  where  $M$  and  $N$  are integers. Here,  $\psi$  is the flux coordinate (analogous to a toroidal radial coordinate) while  $\theta$  and  $\zeta$  are the poloidal and toroidal angles in magnetic flux coordinates (a coordinate system in which the magnetic field lines are straight). In this talk, I will discuss different classes of quasi-symmetric configurations, why fusion energy research is still looking for new magnetic configurations, and the status of magnetic confinement fusion research.

*Host: Dr. Carla Riedel x6178*

Refreshments  
3:45 pm EPS - 2<sup>nd</sup> Floor Atrium