学术报告

题　　目： Cross-section modelling for Beam Emission Spectroscopy-Classical treatment

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时　　间： 10:00, May 3 (Thursday)

地　　点： Room 520, New Building

Abstract：**One of the main diagnostic tools for measuring electron density profiles and the characteristics of long wavelength turbulent wave structures in fusion plasmas is beam emission spectroscopy (BES). The increasing number of BES systems necessitated an accurate and comprehensive simulation of BES diagnostics, which in turn motivated the development of the Rate Equations for Neutral Alkali beam TEchnique (RENATE) simulation code. RENATE can be used both in the interpretation of measured signals and the development of new BES systems, like to model high energy neutral beam based diagnostic systems such as on ITER (1 MeV) and JT-60SA (500 keV). But cross-sections for high beam energy calculations are extrapolated from lower beam energy values. The collisional cross-sections have to be checked and if necessary revised to produce accurate results for the electron population calculation, of a number of excited levels that is well beyond the steady-state approach for beam energies greater than 200 keV.**

The classical trajectory Monte Carlo (CTMC) method is quite successful in dealing with both ionization and capture and excitation processes in ion atom and in ion–molecular collisions. It is a non-perturbative method. All interactions between the colliding partners can be taken into account exactly during the collision. In the last decades a Software package of the classical trajectory Monte Carlo (CTMC) codes using 3-4-5 and many-body systems was developed. During the lecture I show simulation results applying my simulation codes to calculate various cross sections from the total till the multi-differential ones for fusion related systems. The results of the simulations will be compared with other theoretical and available experimental data.