

# Transport of energetic ions due to sawteeth, Alfvén eigenmodes, and microturbulence

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**Abstract.** Utilizing an array of new diagnostics and simulation/modeling techniques, recent DIII-D experiments have elucidated a variety of energetic ion transport behaviors in the presence of instabilities ranging from large-scale sawteeth to fine spatial scale microturbulence. Important new insights include: sawteeth, such as those of the ITER baseline scenario, cause major redistribution of the energetic ion population; high levels of transport induced by low-amplitude Alfvén eigenmodes can be caused by the integrated effect of a large number of simultaneous modes; and microturbulence can contribute to the removal of alpha ash while having little effect on fusion alphas. This paper provides an overview of recent and upcoming results from the DIII-D Energetic Particles research program.

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