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Use Spectrum Simulation Code SOS to test the performance of the Fast ion D-alpha spectrum on HL-2A

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Use Spectrum Simulation Code SOS to test the performance of the Fast ion D-alpha spectrum on HL-2A
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ABSTRACT: In magnetic confined fusion devices, the fast ion is usually generated in heating process, especially when the neutral beam heating is on. When the fast ions collide with the neutral beam, some fast ions neutralize and emit light, but the intensity levels is usually below the continuum radiation level and several orders of magnitude below the thermal charge-exchange(CX), beam emission spectrum and motional stark spectrum level. In order to investigate the fast ion behavior, a fast ion D-alpha(FIDA) system has been built on HL-2A. It can only acquire signal in the red shift direction, because there is no other windows suit for the system in HL-2A. It uses the Gauss curves and least mean square method to fit several components consist of different energy（full energy, half energy and third energy） which also has its stark splits. It gets the FIDA signal performance and its simulation results, which consistent with each other.
KEYWORDS: fast ion, charge exchange recombination spectrum, Fast ion Dα, Beam emission spectrum, Motional stark emission
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