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【335】 High efficiency cyclotron trap assisted positron moderator

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Relying on their unique sensitivity to the electronic environment, slow positrons serve in applied science for the characterisation of materials. Because the creation of slow positrons is inefficient and stringent radio-safety guidelines, their use is limited to specialized laboratories around the world. We report the realisation of a cyclotron trap assisted positron tungsten moderator for the conversion of positrons from common sources to a mono-energetic eV beam with an efficiency of 1.8(2)%. This is an improvement of almost two orders of magnitude compared to the state of the art moderators. This opens the possibility to envisage a widespread use of positron beams as a common characterization tool.

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