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Modeling of positron thermalization in collisional traps ANA BANKOVIC, Institute of Physics, Belgrade, Serbia, JOAN P. MARLER, University of Aarhus, Aarhus, Denmark, GORDANA MALOVIC , Institute of Physics, Belgrade, Serbia, STEPHEN J. BUCKMAN, RSPhysSE, Australian National University, Canberra, Australia, MILOVAN SUVAKOV, ZORAN LJ. PETROVIC, Institute of Physics, Belgrade, Serbia — A Monte Carlo code has been used to follow the orbits of positrons thermalizing from approximately 10 eV down to very low energies. This technique is appropriate as positrons suffer only a very few collisions so their transport is fully non-hydrodynamic. We have studied how the initial energy distribution of a moderated positron beam changes to a low energy, trapped, group of positrons, and which processes contribute to that. We followed how energy and momentum are dissipated in collisions, the thermalization time, the role of the magnetic field, the size of the Larmor radius and geometry of the trap, and how different abundances of gases in the mixture affect the result and other aspects of low energy positron traps. Most importantly in all cases we could sample the efficiency of thermalization by following the losses of positrons due to Ps formation. Complete sets of cross sections covering all major, number, momentum and energy balance processes were included for gases such as Ar, He, H_2, N_2 and N_2/CF_4 mixture. Fore example our results indicate thermalization times of Nt= $2.51*10^{17}$ sm^{-3} for pure nitrogen and $1.41*10^{16}$ sm^{-3} for N_2/CF_4 mixture.

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