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Monte Carlo simulation of the NaI(Tl) detector response to measure activated foils

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This paper introduces a simulation method to predict the output pulse height tally of a gamma detector for an active foil in a specific time after the irradiation. Monte Carlo technique based on the MCNP-4C code was used for the simulations. A combination of two MCNP input files was performed and joined to three FORTRAN programs. The Direct Simulation Monte Carlo code (DSMC) was written and developed based on 5 steps. The developed code is straight forward, so that the calculation time for analyzing the delayed gamma neutron activation is very short. The estimation of the induced radioactivities in the foil by activation is the main goal of the work. Comparison with the experimental results shows the simulation has been done well.

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