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STUDY OF DOSE RATE IN THE BRAIN MODEL BASED ON THE NEUTRON BEAM OF SUT-MNSR

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Boron neutron capture therapy (BNCT) is tumor-cell targeted radiotherapy that has significant superiority over conventional radiotherapies. First in the world, Japan treated with BNCT for a patient with head and neck cancer in last century. So far, some clinical trials used by BNCT have been finished by reactor source. Now, SUT-MNSR (Miniature Neutron Source Reactor) is being designed and built, it will be a new reactor facility for BNCT research. According to SUT-MNSR physics design, SUT-MNSR will have the thermal neutron beam and epithermal neutron beam, the parameters of thermal and epithermal neutron beams are good enough for BNCT. Before SUT-MNSR is used for BNCT clinical trials (Brain tumor), the dose rate distribution in the body should be estimated. The paper will introduce the simulation for SUT-MNSR by Monte Carlo N-Particle Transport Code (MCNP) and the establishment of human brain model according to the brain tumor component and physics dose rate distribution in brain tumor by MCNP program.

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