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PARETO OPTIMAL BEAM PARAMETERS FOR 3D DYNAMICAL (B/GD) NEUTRON CANCER THERAPY

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Dynamical neutron cancer therapy (NCT) has recently been proved to be superior, in penetrating the surface of a (B/Gd)-loaded cancerous region, to a stationary neutron beam of the same intensity. By employing the relevant neutron diffusion theory, author demonstrate in this paper how the therapeutic utility index and the ballistic index for this kind of dynamical NCT form a nonlinear optimization process in which the neutron beam modulation frequencies and relative time delays form the control vector. A Pareto optimal control vector for this problem is identified and reported for the first time.

