

The Use of ISIS as a Proton Therapy Facility,
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U.K. - A feasibility study is described in which a beam
suitable for cancer therapy is obtained from the ISIS
proton synchrotron. The clinical requirements imposed
on the beam dictate strict control over parameters such
as energy, position, and pulse-to-pulse stability. A
reduced intensity 70 MeV linac pulse is chopped to
provide a nanoampere H⁻ beam which is injected into
the 50 Hz synchrotron. The required treatment
intensity is controlled by the pulse length of the
chopper, and the energy by the time of extraction from
the synchrotron (300 MeV maximum). All the
elements of the therapy beam line will operate at 50 Hz
and be synchronised to the main magnet field. The
beam is delivered to the patient through an isocentric
gantry and is suitable for both pixel scanning and
passive scattering treatment techniques. Beam
diagnostics and fail-safe patient protection systems are
considered in all sections of the facility.