The SPES direct UCx target

A. Andrighetto[1]
[1]*INFN Laboratori Nazionali di Legnaro, I- 35020, Legnaro, Italy*

A possible solution for a target system aimed at the production of exotic nuclei as a result of high energy fissions in ^{238}U compounds has been analyzed. The proposed configuration is constituted by a primary proton beam (40 MeV, 0.2 mA) directly impinging on a UC_x multiple disc target inserted within a cylindrical carbon box. In order to extract the fission fragments, the box has to be hold at 2000°C. This system has been conceived to obtain both a high number of neutron rich atoms (about $1 \cdot 10^{13}$ fissions/s) and a quite low power deposition in the target. The thermal and thermo-mechanical analysis of the proposed configuration shows the capability of the thermal radiation to cool the discs with a reasonable margin below the material melting point. Moreover, the possibility of increasing such margin with simple modifications of the target design is shown by means of parametric analyses.. Preliminary calculations of the target induced activity, and the atoms effusion inside the target container, have also been performed.