

CERN LIBRARIES, GENEVA

PHYSICS III COMMITTEE

MEMORANDUM

CM-P00043105

Re: External PS-target, to be irradiated in the search for superheavy elements (P15)

To: Dr. F Herz, Secretary of the Physics III Committee

From: R. Brandt, P. Patzelt (Marburg)

In our old proposal we asked for an irradiated thorium target in order to search for superheavy elements and (possibly) for "Pontecorvo-Particles" (i.e. spontaneous fission activities in thorium). We would now like to ask for an irradiated uranium target. The reasons for this are as follows:

1) Due to the lower density of thorium as compared to tungsten or uranium, thorium targets would have to be longer than those normally used as production targets for external beams. A thorium target, therefore, would cause technical problems and discussions. A uranium target, on the other hand, is just as long as the tungsten targets and was successfully irradiated in the spring of 1971. We would like to procure a uranium target identical to what ^{we} used earlier.

2) Irradiated uranium targets have been used quite extensively in the search for superheavy elements. However, as far as we know, all other groups have been working hard chemically isolating individual heavy elements and hoping the eca-elements would follow them quite closely. We plan to investigate only groups of heavy elements (HgS as carrier in an acid solution and NiS in an alkaline solution). These fractions will be investigated for spontaneous fission activity, using mica (the most specific technique), proportional counters, and a spinner. If possible we also want to look for actinides.

3) Uranium will more than likely be used quite extensively as a target in the Unilac (heavy ion accelerator) presently under construction at Darmstadt. We want to gain experience in working with rather active uranium targets. The technical and chemical problems associated with uranium targets are to some extent different from those associated