0.1 Motivation

The Glasow photon tagging spectrometer at Mainz has an electron band width of 6 to 95 % of the incoming electron Energy, E_0 [**?**]. After an upgrade [**?**] to accomodate the energies avaible with MAMI-C, roughly up to 1.6 GeV [**?**], this will allow for tagged photon energies up to roughly 1.54 GeV. In order to increase this photon energy, post bremsstrahlung electrons of energies below roughly 100 MeV have to be detected, which is not possible with this Main Tagger, MT. The goal can be achieved by installing a small tagger upstrem of the MT, which then detects these lower energy eletrons. It is reasonable to build this Endpoint Tagger, ET, such that there is an overlap of the band widths of both taggers, ET and MT. Therefore, the ET should be capable of detecting post bremsstrahlung electrons with energies up to at least 150 MeV. When the ET is used, the MT can only serve as a cleaning magnet. In order to guide the main beam safely to the electron beam dump an additional Correcting Magnet, CM, is needed that corrects for the deflection of the main beam by the ET.

Whit this installation in operation it is possible, for example, to investigate the threshold region for the production of η' mesons.

Since adding ET and CM to the tagger set-up will only be needed for special experiments, this addition will be built such that it can take the space which otherwise a goniometer box has, which helps to privide linearly polarized photons from coherent bremsstrahlung. Thus, these two installations can be interchanged.

0.2 The ET-CM-MT set-up

Figure 1 shows the set-up of the magnets ET, CM and MT in its location in the MAMI tagger-hall.

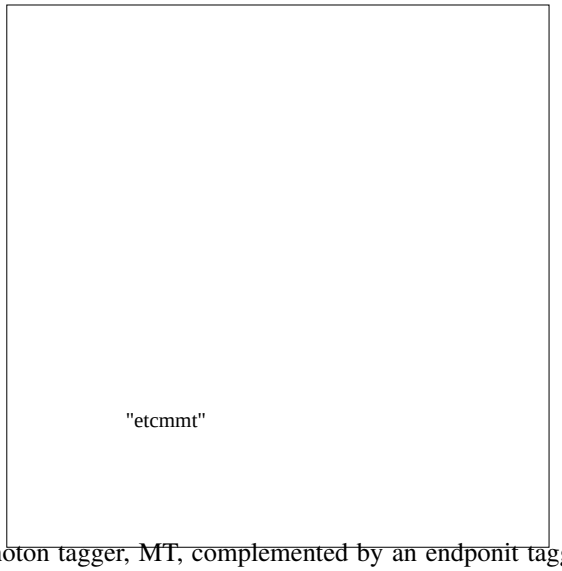

Abb. 1: The Glasgow photon tagger, MT, complemented by an endponit tagger, ET, and a correction magnet, CM. Only the main beam is indicated, which ends in the beam dump, BD

The magnets ET and CM had once been used in the low-energy Glasgow Tagger [**?**] and there were named DS2 and DS4. Modofications were needed in order to serve the present purpose. In ET the Rogowski profiles were filled in with iron and the pole gap was reduced from 8 cm to 2 cm by inserting two iron plates which then also serve as top and bottom of the vacuum chamber. Similar changes were made to turn DS4 into the correctionmagnet, CM. As a result fields up to 1.4 T can now be generated in ET.

0.3 The endpoit tagger, ET

Figure 2 shows a field map of ET as measured with a current of 300 A (???).
This field map was then taken to raytrace electrons of several energies through the magnet.

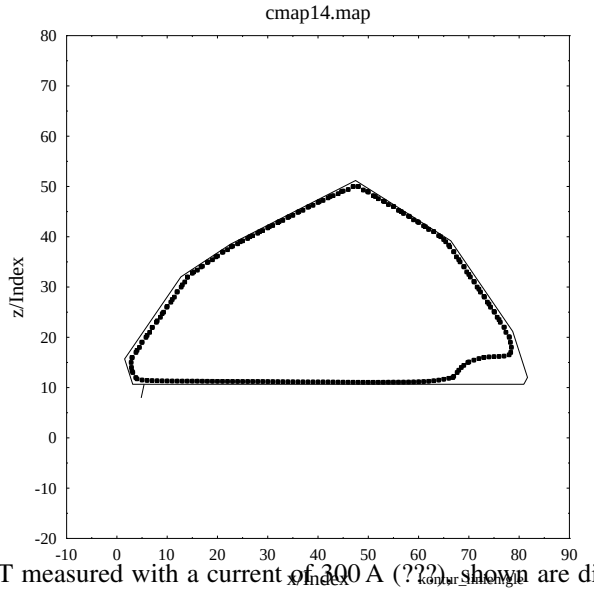

Abb. 2: Field map in ET measured with a current of 300 A (???), shown are different lines of costant magnetic field.

Figure 3 gives a result for electrons up to 170 MeV, which shows that ET can easily accommodate the required needs.

From the raytracing the point to point focus of the radiator is obtained, which is also shown in fig. 3.

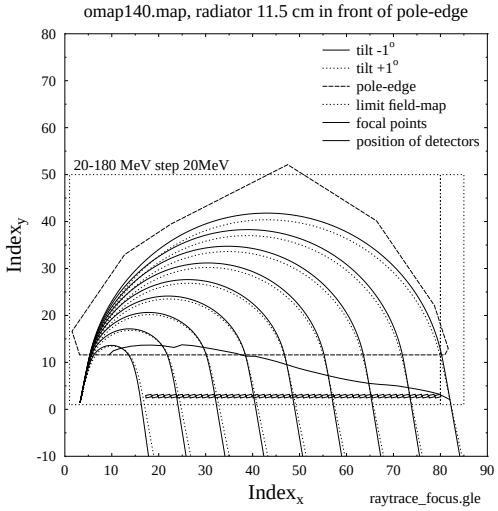

Abb. 3: Electron trajectories (full lines) in ET for energies from 10 to 170 MeV in steps of 10 MeV. The almost streight full line gives the main beam. The dashed line depicts the shape of the pole faces, the dotted line indicates the area of the field map.