

ABSTRACT

DEVICE FOR THE EXTRACTION OF ELECTRICAL CHARGE CARRIERS FROM A CHARGE CARRIER GENERATION SPACE AND METHOD FOR OPERATING SUCH A DEVICE

The invention relates to a device for extracting electrical charge carriers from a charge carrier generation chamber with at least one electrode arrangement for extracting charge carriers, wherein the at least one electrode arrangement has at least a first grid electrode and a second grid electrode with corresponding openings. The first and the second grid electrode each contain at least one first electrically conductive grid electrode region, wherein the at least one first grid electrode region of the first grid electrode is configured in a first layer and the at least one first grid electrode region of the second grid electrode is configured in a second layer. The first layer and the second layer are arranged one after the other within the electrode arrangement in the particle emission direction and are spaced from one another by a first distance along the particle emission direction, wherein the at least one first grid electrode region of the first grid electrode forms a first electrically conductive layer portion in the first layer. In addition, a second electrically conductive layer portion, which is electrically insulated from the first layer portion, is configured in the first layer. The second layer portion is formed by at least one second electrically conductive grid electrode region of the first grid electrode or of the second grid electrode, and the second layer portion is electrically conductively connected to the at least one first grid electrode region of the second grid electrode. The device according to the invention for extracting charge carriers thus represents an electrically switchable extraction grid electrode arrangement by the aid of which the beam characteristics of a particle beam of extracted charge carriers can be changed.

(Fig. 3)