**Maximal Impact Parameter**

As is known, maximal impact parameter is determined by relation of several quantities: radius  of neutralization, Debye screening radius , size , characterized by the time flight through the region of interaction of an electron with an ion, as well the radius  of the beam:



Radius of neutralization depends only on density  of the electrons in the cooling beam:



Its typical values are . This leads for collision with protons to the corresponding values for  correspondingly.

Debye screening radius  depends on plasma frequency  and relative velocity ion and electron :



Usually , so that  and then



In these formulae  is the longitudinal mean square velocity, which is determined by the longitudinal temperature , and dimensional (length) slope coefficient  characterizes the slope of linear dependences  on dimensionless ion velocity . For typical value of longitudinal temperature the values of slope coefficient  are correspondingly .

