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Spectrum of relative momenta of the neutron and proton at the deuteron peripherical breakup in the limit of very low momentum transfer

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In the limit of very low momentum transfer to one of the nucleons,
the analytical expression for the spectrum $dW(k)$ of relative momenta
k of the neutron and proton, produced at the deuteron peripherical
breakup, is obtained taking into account the S-wave function
of the deuteron. It should be stressed that namely this formula for $dW(k)$ describes the spectrum of relative momenta of nucleons at the deuteron dissociation
in the Coulomb field of charged particles (in particular – heavy nuclei).
Using the well-known Hulthen form of the deuteron S-wave function,
the explicit calculation of the spectrum $dW(k)$ has been performed.
Finally, corrections due to the deuteron D-wave state are briefly analyzed .

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