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On Pair Production by Scattering of the γ -Ray

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§ 1. Introduction

When the high energy radiation passes through matter, its energy is ~~lost~~ ^{dissipated} by various processes such as ionization, radiative collision, Compton scattering, materialization etc. The probability of occurrence of these processes were calculated obtained by performing the calculation to the second approximation in Born's theory of collision. The results of these calculations obtained were not fully in accordance with ^{the} experiment, so that the applicability of the present form of the quantum mechanics to ^{the} high energy radiation became doubtful.†

Now owing to the importance of the collision problem for of the high energy radiation, it will not be meaningless to carry through the calculation to the third approximation. If the probability of occurrence of the third order process ~~be~~ ^{is} ~~was~~ ^{is} ~~found~~ ^{found} to be