

the anomalous energy spread at both the injection and pre-injection foci and also to estimate the effect due to the cathode region. Extrapolating our experimental data to zero current we have been able to obtain the energy spread due to the cathode temperature alone.

### References

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#### 1.15 Field lens application in electron-atom collision experiments

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#### 1.16 The effective geometrical factor $(Ld\Omega)_{\text{eff}}$ in differential cross section measurements

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##### 1. Angular scattering of electrons

An electron-atom collision with the angular analysis of scattered electron including the most important experimental parameters, such as the electron beam divergence angle  $2\alpha$ , the analyser view angle  $2\beta$ , gun ( $r$ ) and detector ( $R$ ) distances from the scattering center, in the horizontal plane, is shown schematically in Fig. 1.

In the formula for differential cross section calculation from experimentally measured data

$$\frac{d^2\sigma}{dE d\Omega} = \frac{I_g}{I_0} \cdot \frac{1}{n \cdot L \cdot d\Omega \cdot dE} \quad (1)$$

a geometrical factor  $(Ld\Omega)$  appears which takes into account the different scattering geometry at various scattering angles  $\theta$ . It is necessary either to normalize all measurements to the same scattering geometry, or to determine exactly the