electron density function

The electron probability distribution function, ρ, defined as

$$\rho(\mathbf{r}) = n \int \Psi^*[\mathbf{r}(1),\, \mathbf{r}(2) \dots \mathbf{r}(n)]\, \Psi[\mathbf{r}(1),\, \mathbf{r}(2) \dots \mathbf{r}(n)]\mathrm{d}\mathbf{r}(2) \dots \mathrm{d}\mathbf{r}(n)$$

where Ψ is an electronic wave-function and integration is made over the coordinates of all but the first electron of n. The physical interpretation of the electron density function is that $\rho\, \mathrm{d}\mathbf{r}$ gives the probability of finding an electron in a volume element $\mathrm{d}\mathbf{r}$, *i.e.*, electron density in this volume.

Source:
PAC, 1999, *71*, 1919 *(Glossary of terms used in theoretical organic chemistry)* on page 1937