partikula bakarraren azterketa

$\Sigma(P)$ partikula bakarra (anitz gas idealarena)

Σ anitz gain egitura-funtzioa
partikula bakar batena

Kontuz Σ gaudelako E energiaren espazioan
P momentuaren espazioan.

$$\Sigma(P) \approx \left[\frac{1}{h^3}\right] \int_{p\leq P} d^3q \, d^3p = \frac{1}{h^3} V \frac{4}{3}\pi P^3$$

↓ eskuz sartutako faktorea

$p \to p+dp$ $\quad g(p) \equiv \frac{\partial \Sigma(p)}{\partial p}$. $\quad g(p) = \frac{1}{h^3} V 4\pi p^2 \rightarrow$

$$\boxed{g(p)\cdot dp = \left(\frac{V}{h^3}\right) 4\pi p^2 dp}$$

$$E = \frac{1}{2}\frac{p^2}{m} \Rightarrow (2mE) = p^2$$

$$\boxed{p = (2mE)^{1/2}}$$

$$dp = \frac{1}{2}\frac{1}{(2mE)^{1/2}} \cdot (2m)^{1/2} \cdot dE$$

$\Sigma(E)$

$$\Sigma(E) \approx \left(\frac{1}{h^3}\right) V \cdot \frac{4}{3}\pi \, (2mE)^{3/2}$$

$E \to E+dE$ $\quad g(E) \equiv \frac{\partial \Sigma(E)}{\partial E}$ $\quad g(E) = \frac{1}{h^3} V \cdot 2\pi \, (2m)^{3/2} (E)^{1/2} \cdot dE$

$$\frac{V}{h^3} 4\pi \, (2mE) \frac{1}{2} \frac{1}{(2mE)^{1/2}} (2m)^{1/2} \cdot dE$$

$$\frac{V}{h^3} 2\pi \, (2m)^{3/2} E^{1/2} \, dE$$