

This range would be within the range of energies of cosmic rays, which would represent the temperatures reached in supernova explosions;

$$T_d = 2 \times 10^{13} K$$

$$T_d = 12 \times 10^{13} K$$

$$T_{nat} = 7.20423 \times 10^{12} K$$

$$T_d = T_{nat} \left(1 + \frac{16n^2}{Z}\right)$$

$$E = kT = 8.6173324 \times 10^{-5} eV K^{-1} \times 2 \times 10^{13} K = 1.7235 \times 10^9 eV$$

$$E = kT = 8.6173324 \times 10^{-5} eV K^{-1} \times 12 \times 10^{13} K = 1.0341 \times 10^{10} eV$$