

# The polarization potential as a probe in interstellar matter.

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It is established since a long time (1926) that one can model atomic structure of alkaline species adding to the Coulomb potential a potential called the polarization potential  $V_p(r) = -\frac{e^2}{2} \alpha_D \frac{1}{r^4}$ . (It acts same sign that the Coulomb potential. (Born 1960)

Our main purpose is to show that the effect of modification of the core structure of alkaline atoms in their neutral states, leads to energy transitions detectable in low temperature universe domain (as interstellar molecular clouds called GMC giant molecular clouds).

The emission of light due to atomic transitions with effective quantum numbers  $n_* = n - \delta$  be found in interstellar clouds, or even in HI regions of space for  $2 \geq n_* \geq 9$ .

All subsequent calculations will use the

hydrogen ionization potential  $I_H = 13.616 eV$  to measure the effect of the atom core on energy levels.

$\alpha_D$  is the static dipolar polarizability, estimates of that quantity exists for elements like : Mg, Na, Li, Cs, K, Ca

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