

Temperature dependence of the pressure broadening of spectral lines

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The classical theory of collisional broadening of an isolated spectral line was used to obtain simple analytical formula for the temperature variations of the widths of pressure broadened spectral lines in a wide temperature range. This formula is:

$$\beta(T) = KT^P \quad (1)$$

where K and P are constants depending on the type of interaction and the colliding particles.

Model calculations performed for a Lennard-Jones potential indicate that the repulsive part of the potential is more effective at high temperatures, while the attractive part is more effective at low temperatures.