

1. Relax the assumptions of the model: speeds, directions
2. Measure the speed distribution
3. 'Fit' the speed distribution; the formula $N(v)dv = Av^2 \exp^{-mv^2/(2kT)} dv$ works well; it's called the Maxwell-Boltzmann distribution
4. 'Most probable,' 'average,' 'mean square,' 'root mean square' speeds

5. The 'Boltzmann factor' : $\exp^{-\frac{\text{energy}}{kT}}$
6. example of point 5: atmospheric density as a function of height-
Why are we not all lying on the floor gasping for breath?
7. Why is the average energy three halves of kT ?
The 'equipartition theorem'; 'Degrees of freedom'.
8. Other implications of the equipartition theorem.