## Collision Theory

Modelling chemical hinetics as governed by collisions between recubant noteches. Rate is dependent on both collision frequency and collision energy
holectes. Kate is dependent on buth collision frequency and collision every
For a bimolecular readilar: A+B -> P,
(-Ea) concentrations of recubants
For a bimolecular reaction: $A+B \rightarrow P$ ,  Rate = $Z \exp\left(-\frac{\epsilon_{\alpha}}{RT}\right) [A][B]$ concentrations of recubarts
Collision frequency Locky > probability Lacker ( Zexp(-En) = le
Collision frequency factor probability factor { Exp(-En) = le rate constants
(1) Collision Frequency Factor, 7
(1) Collision Frequency Factor, 7    SRT   Collision cass section, i.e. Tid2, where dis the collision diameter, e.g.     Avoyato's Number   Tip   Tip   Tip   Tip     Avoyato's Number   Tip   Tip   Tip   Tip     Tip   Tip   Tip   Tip   Tip   Tip     Tip   Tip   Tip   Tip   Tip     Tip   Tip   Tip   Tip   Tip   Tip     Tip   Tip   Tip   Tip   Tip   Tip     Tip   Tip   Tip   Tip   Tip   Tip   Tip     Tip
The william diameter, e.g.
Avogados Nunser Berry molecine
( a 1 A) I B Carter in Harr
(B) (B) (cylinder o)
mean renovive speed
(i.e. the owerage relative speed at d=1/A+1/B wentide gets hit.
which the molecules more, relibive to
Darlo ophrac Pacinal I dia Handley all all the
All hall help of Carrier
Pi Parsonal pars personal reduced mass p= mams of the two-lody Atis system.
8 V TIP, "lefterbive" mays of
reduced mass $V = \frac{M}{M}$ (Hell two-lader ATIS
MA+MB ) system.
2) Probability Fucker, Pf > From Boltzman Distribin.
Activities & For N/ESES & number of molecules with linetiz
P= exp (PT) = erry yrerber blum Ea
Arbivation (E>En) = N(E>En) tobal released with hinder of molecules.
grande preparties.
I when this is the fraction of collisions in which the notecutes
have enough energy to reach the
HE E> Ea, these
Consider Boltzman Disbrishbion:
feta, L
these units En