## **TH/P2-5** Frequency and Damping Rate of the Geodesic Acoustic Mode in Collisional Plasmas (Gao, Z)

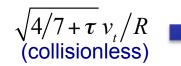
-0.16

## Five Collisional Operators are employed and compared for the GAM:

- (a) Krook operator with number conservation only;
- (b) Krook operator with number and energy conservation;
- (c) Lorentz operator with a constant collision rate;
- (d) Lorentz operator with an energy-dependent collision rate;
- (e) Hirshman-Sigmar-Clarke collision operator

## Collisional damping

- non-monotonic behavior for all
- overestimated damping for (a)
- overestimated at low collisionality but underestimated at high collisionality for (c)
- close results for (b), (d) and (e)
- GAM frequency



 $\frac{\sqrt{4/7 + \tau} v_t/R}{\text{(collisionless)}} \implies \frac{\sqrt{1 + \tau} v_t/R}{\sqrt{5/3 + \tau} v_t/R} \text{ for (a)}$ 

**Energy conservation of the collision operator is** important for GAM as well as number conservation

