

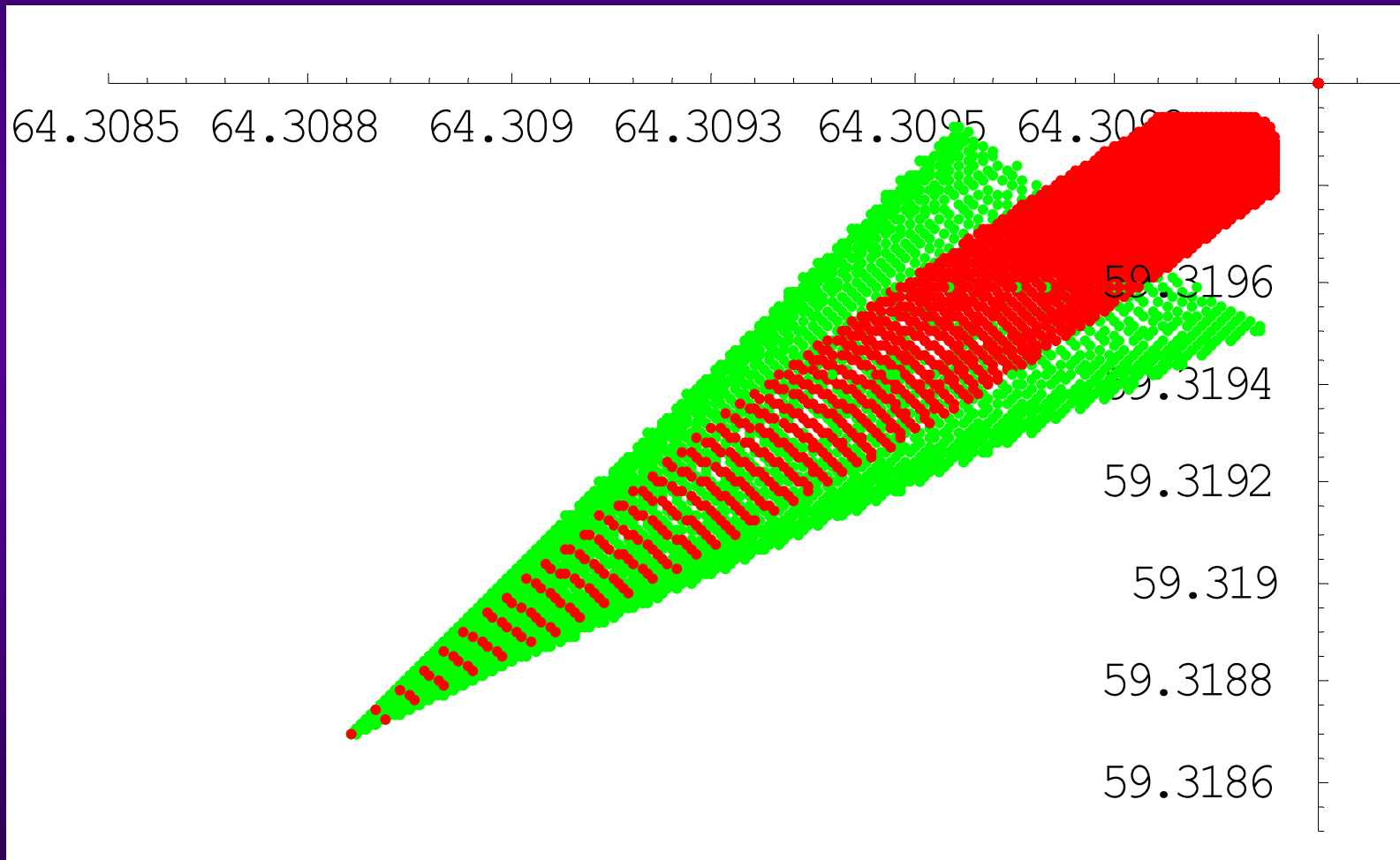
# LANDAU DAMPING BY OCTUPOLES AND SPACE CHARGE

E. Metral

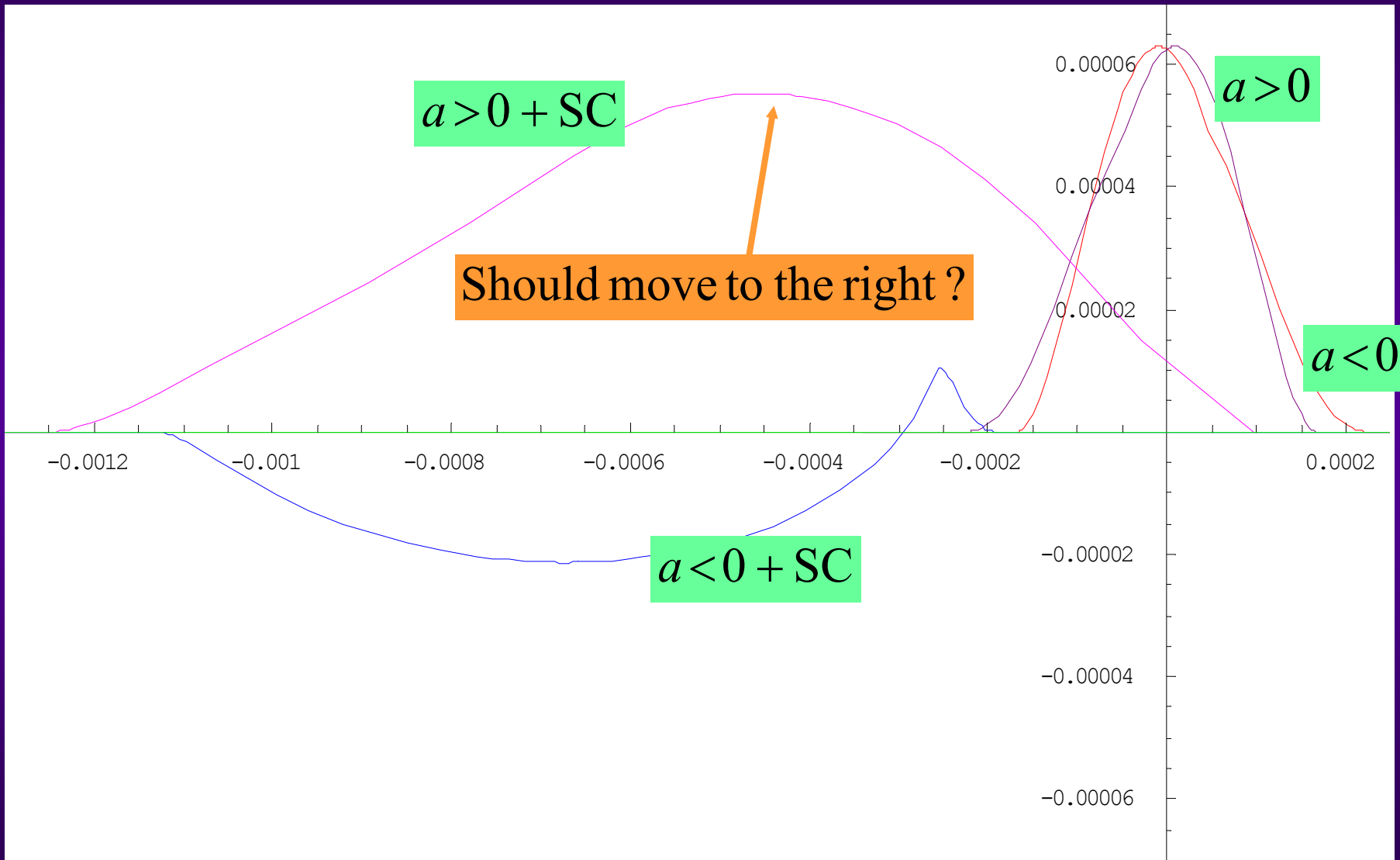
- ◆ **Space-charge tune shift used in my previous computations**
  - Round cross-section and parabolic density  $\Rightarrow$  Not self consistent with the quasi-parabolic distribution
  - Using the same limit as for the quasi-parabolic distribution  $\Rightarrow$  Here is the approximation (in fact I introduce tails, which is what we want...)
- ◆ **Self-consistent space-charge tune shift for the quasi-parabolic distribution**

**Green  $\Rightarrow$  Not self-consistent**

**Red  $\Rightarrow$  Self-consistent**



# WHAT WILL HAPPEN TO THE PREVIOUSLY COMPUTED STABILITY DIAGRAMS ?



## CONCLUSION

- ◆ **Self-consistent space-charge tune shift for the quasi-parabolic distribution computed analytically**
- ◆ **Beam transfer function expressed with 10 double integrals, which “just” remain to be solved...**