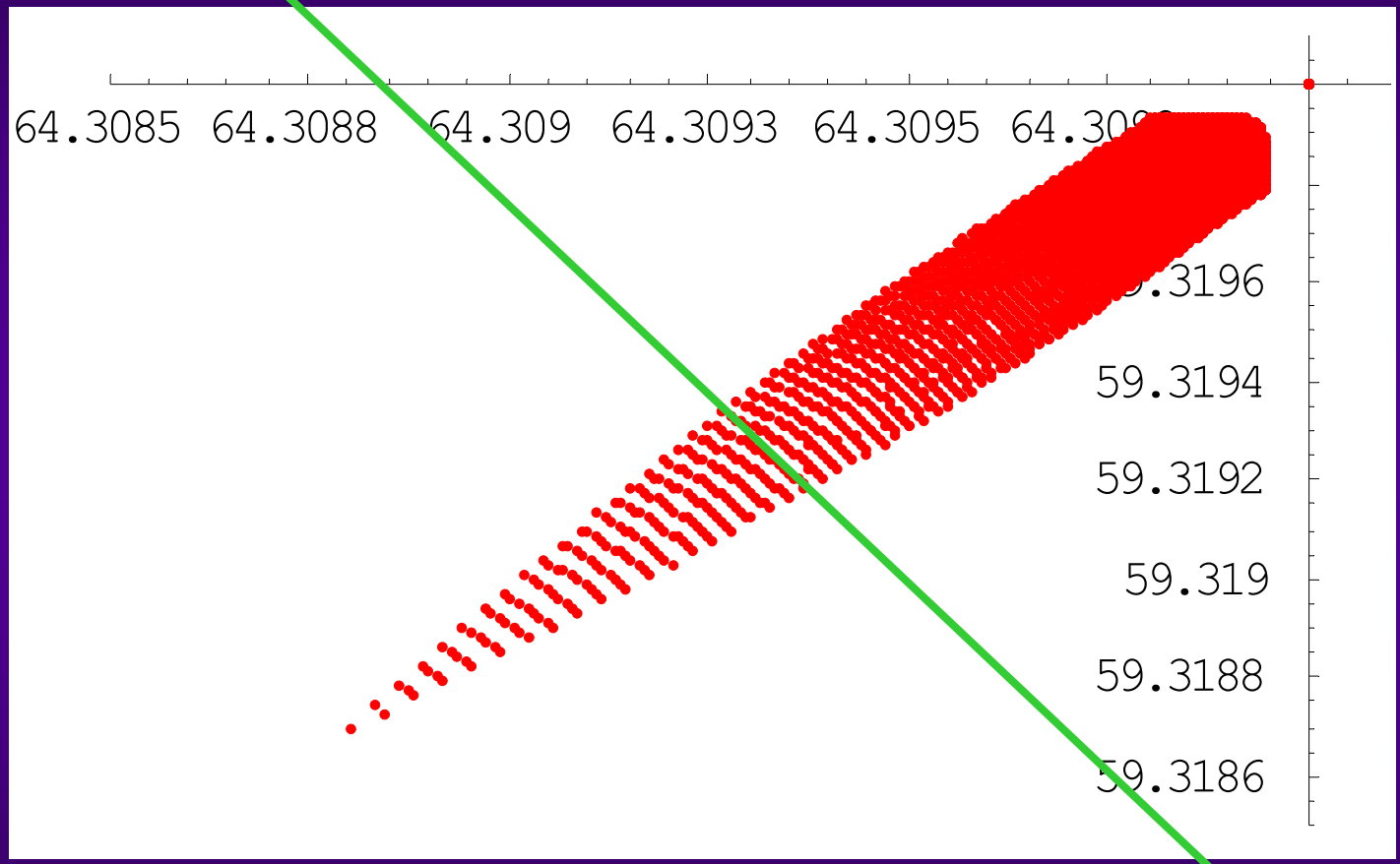
LANDAU DAMPING
BY OCTUPOLES AND SPACE CHARGE

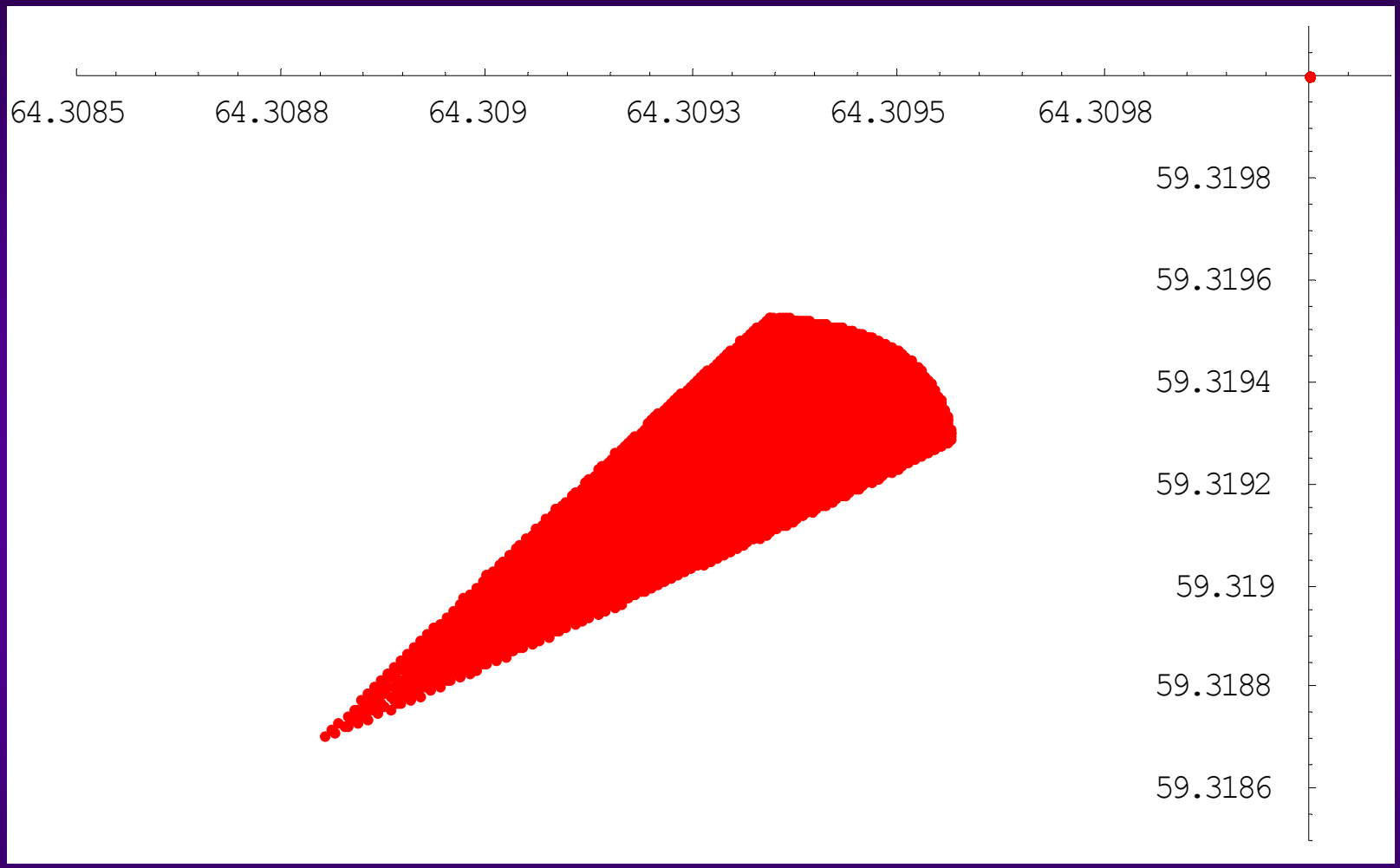
E. Metral

- **Self-consistent space-charge tune shift for the quasi-parabolic distribution : Status ?**
- **Approximation**

Error in the plot presented at the LCE meeting 03/10/03 !

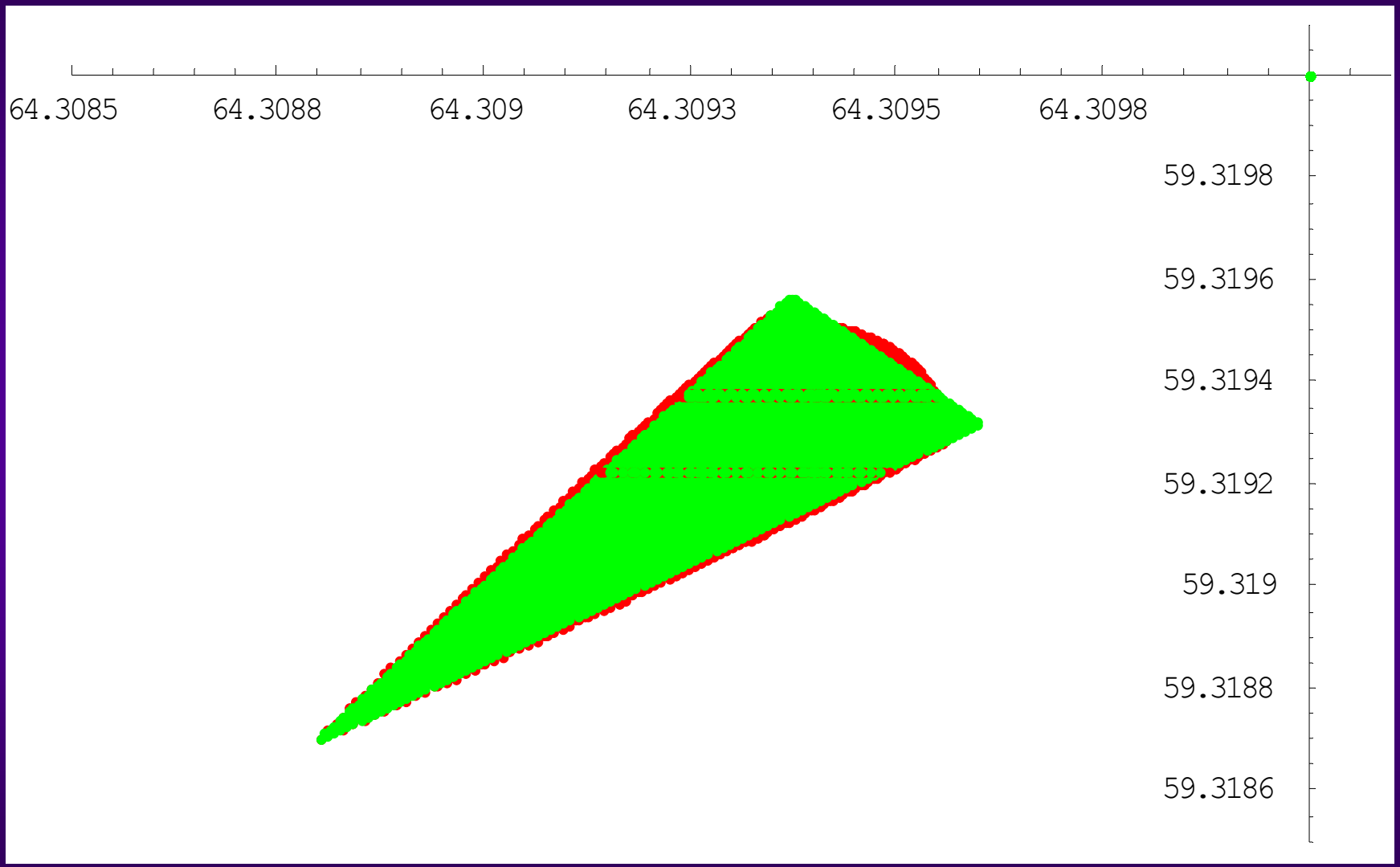


“Correct” plot

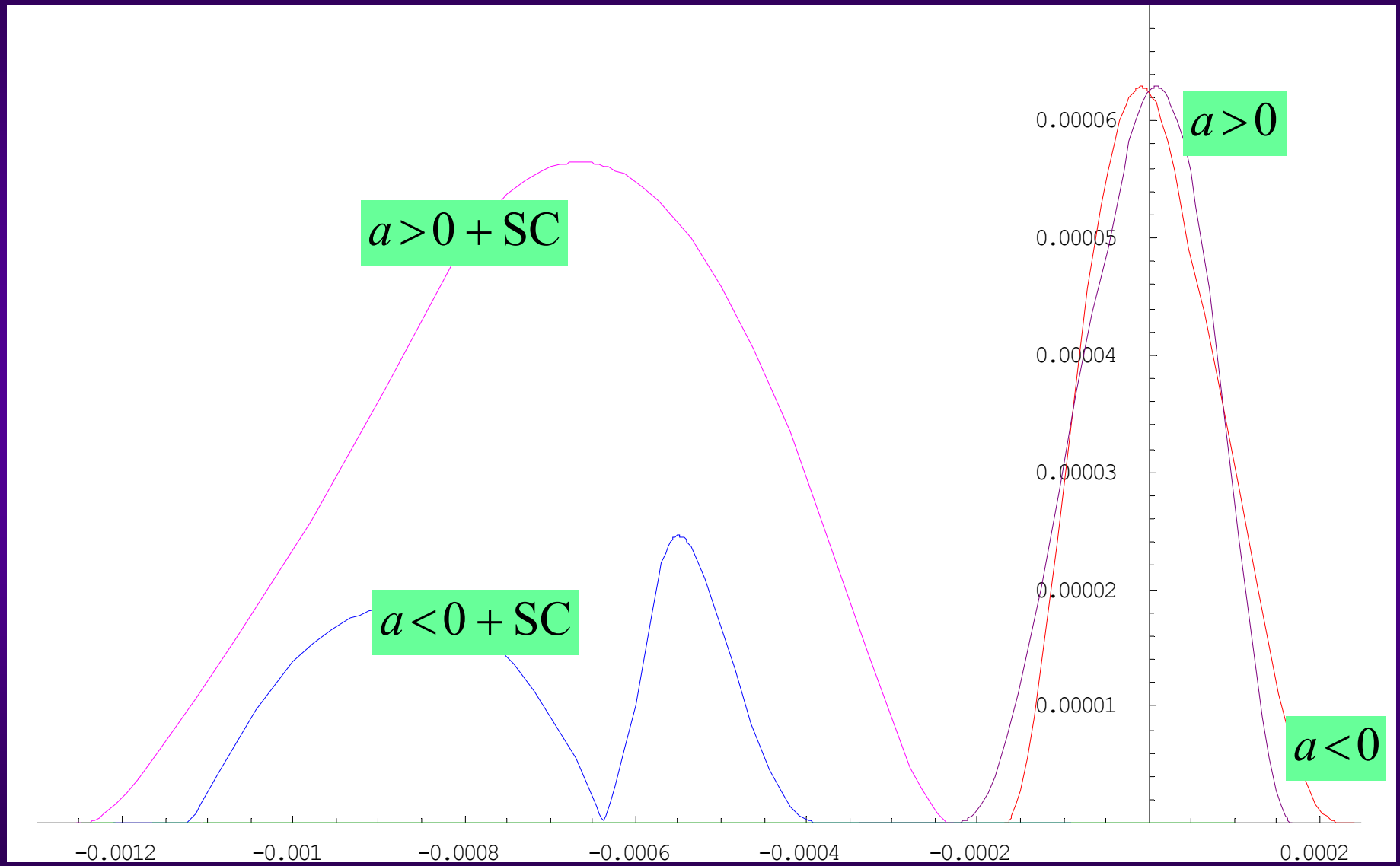


- **The 10 double integrals to draw the stability diagram have not yet been solved**

Approximation of the plot by terms in J_x and J_y only

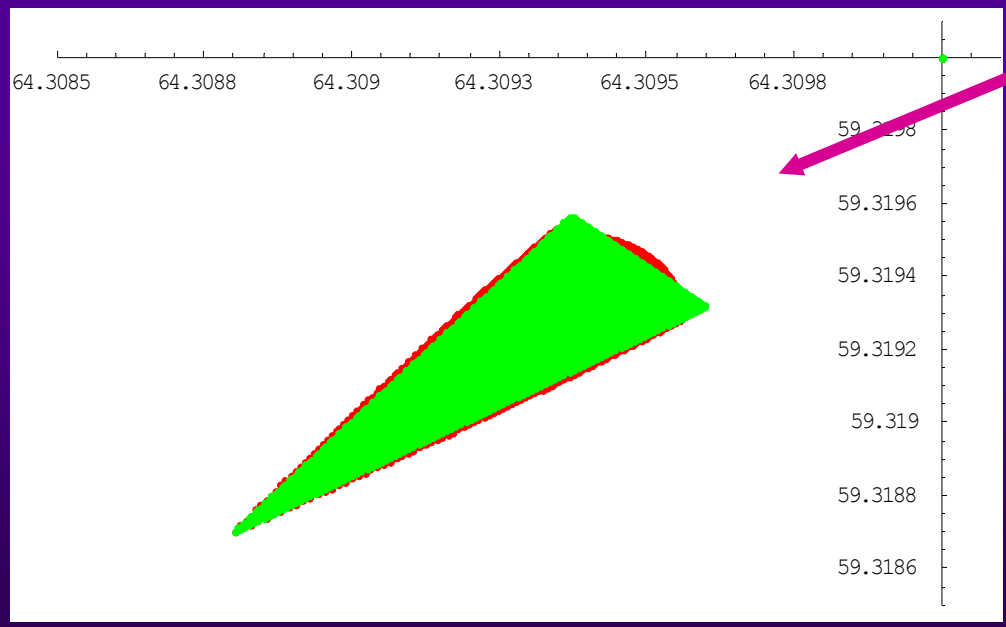


Stability diagram for the approximated tune shift (Nominal LHC beam at injection)



CONCLUSION

- The quasi-parabolic distribution is thought to be a good approximation for the transverse distributions

- Where does the gap come from in both plots ?

  ⇒ From the longitudinal motion, which has been neglected until now and which will put particles here, and thus will increase the stability diagram