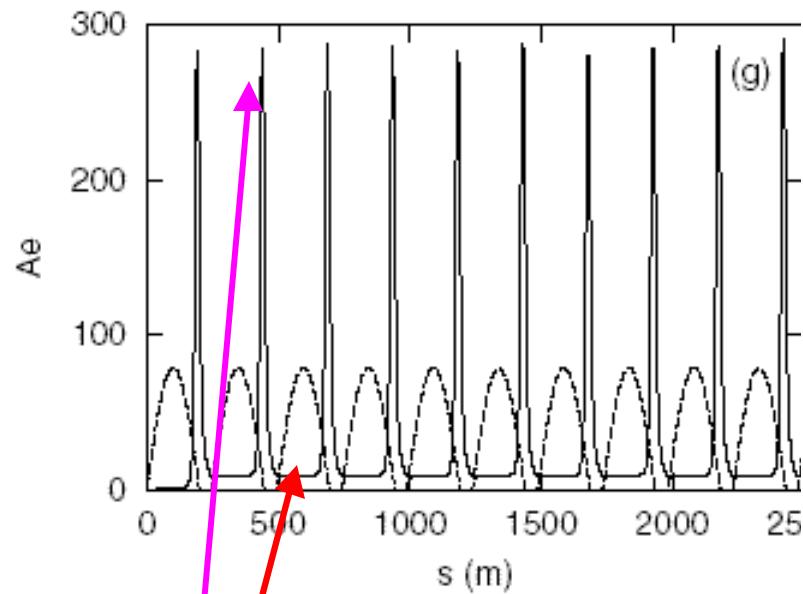


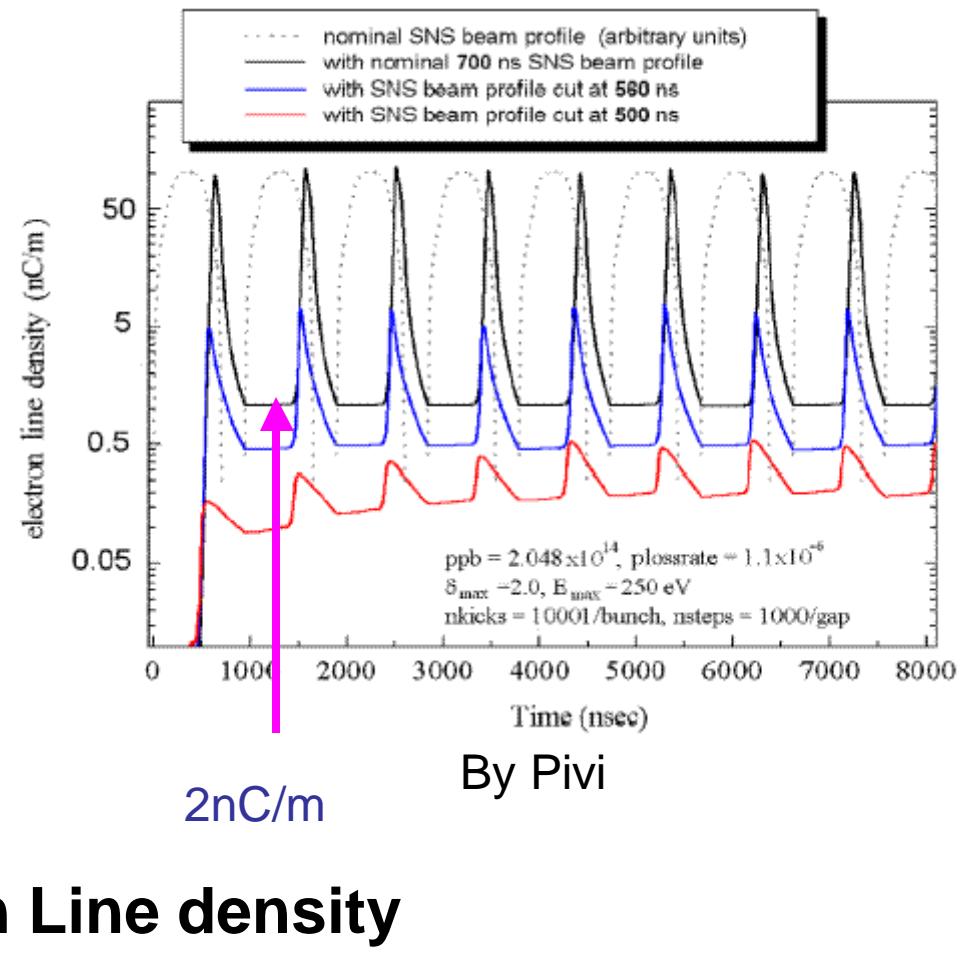
E-cloud study in SNS

	Ohmi (PRST-AB 029901)	Pivi (PRST-AB 034201)
Proton loss rate	1.1×10^{-5} Or 0.1% per 100	1.1×10^{-6} Or 0.1% per 1000
SEY δ_2	2.1	2
Energy	2.0 GeV	1.9 GeV
Longitudinal bunch shape	sinusoidal function	Input from data
elastic reflection electron & space charge of e-cloud	No	Yes
E-cloud line density λ_{\max} (m^{-1})	2.7×10^{11}	3.1×10^{11}
Instability Model & study method	coasting beam and Gaussian e-cloud; analytic	Particle Simulation, Refer to PRST-AB 014203, by Michael, ...



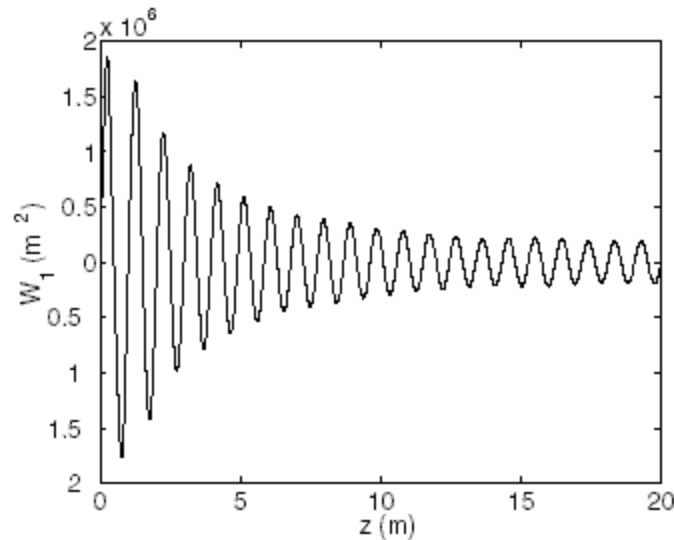
A_H
 A_L

By Ohmi



Electron Line density

Ohmi



Wake field of the e-cloud

The stability criterion is given by the dispersion relation as follows

$$U \equiv \frac{\sqrt{3} \lambda_p r_p \beta \omega_0}{\gamma \omega_e \eta \sigma_{\delta E/E}} \frac{|Z_1(\omega_e)|}{Z_0}$$

If $U > 1$, unstable.

For SNS, $U_L = 0.1$, $U_H = 4.0$

First Simulation result,

ploss=1.1e-6

