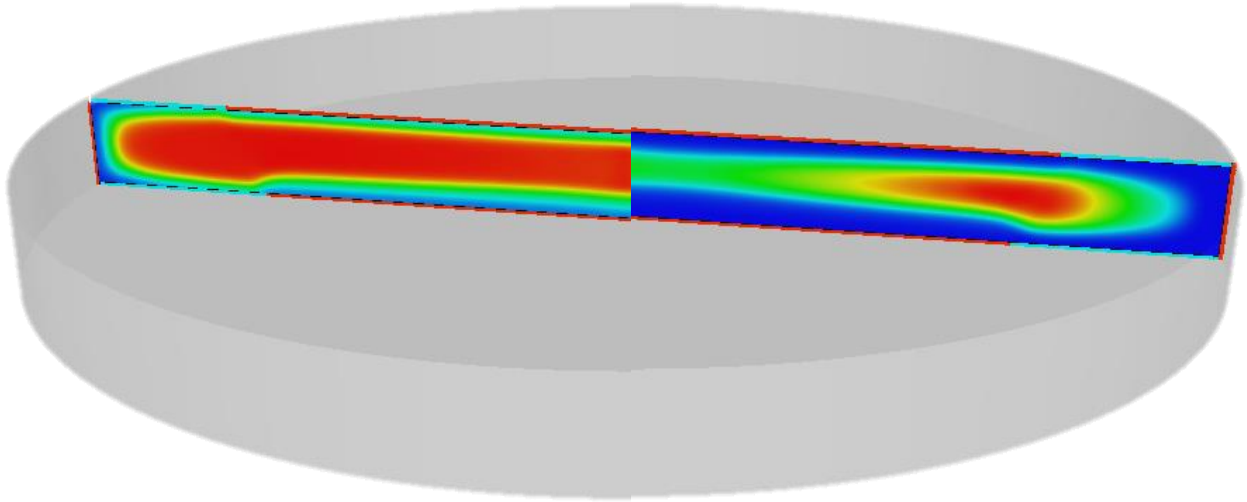
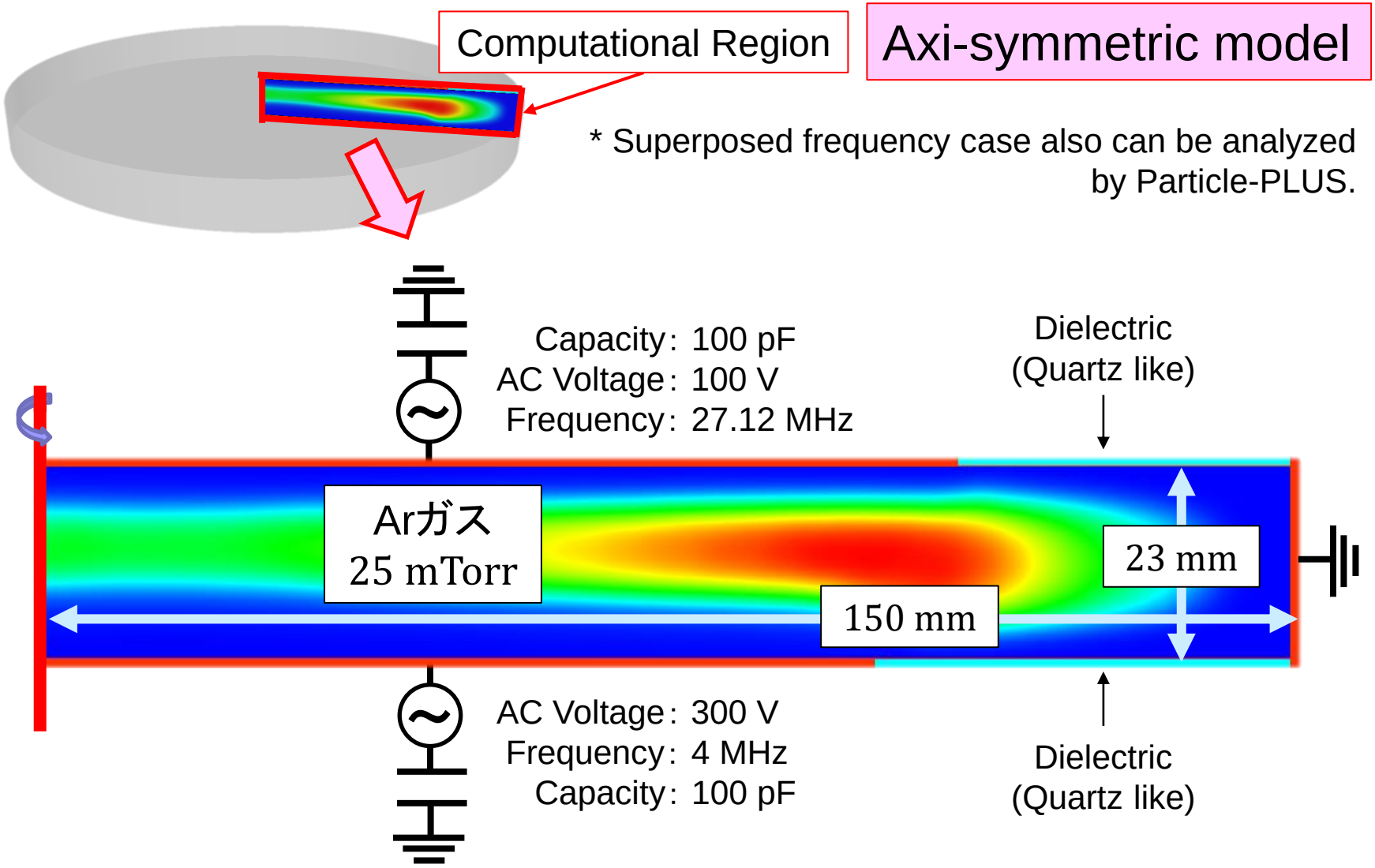
— CASE EXAMPLE —

Dual Frequency CCP

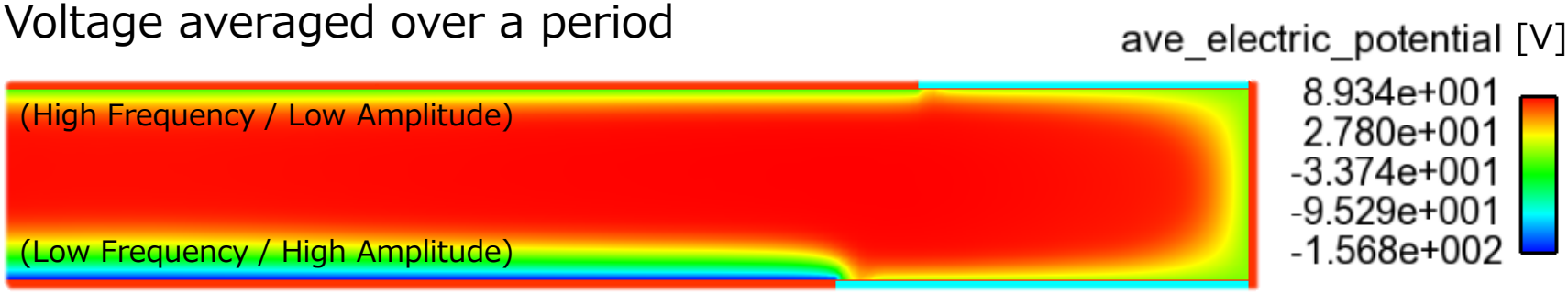


Model



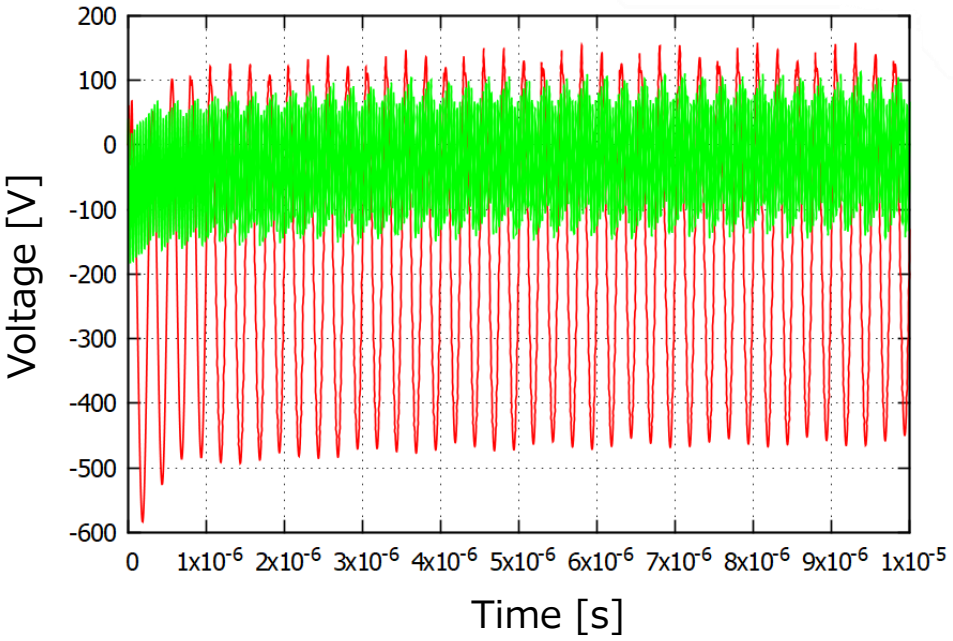
Voltage

Voltage averaged over a period

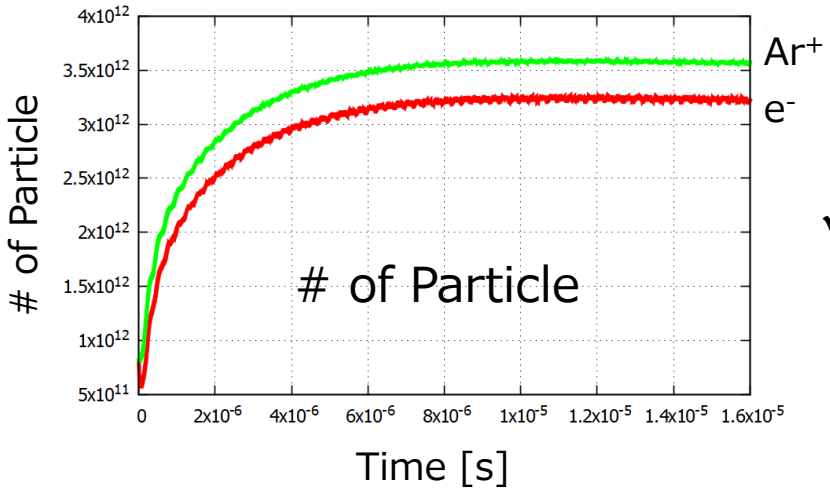


- ✓ Ion is left in plasma region since electron velocity is larger than ion's one. Therefore voltage in plasma is slightly positive.
- ✓ Voltage on substrate has minus component of DC because of **self-bias**.

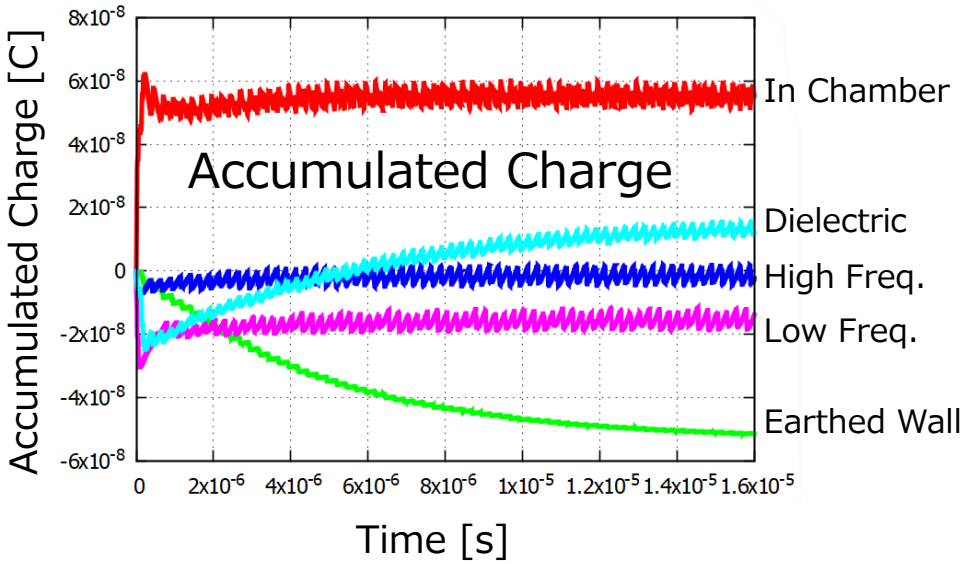
Voltage on substrate



Particles

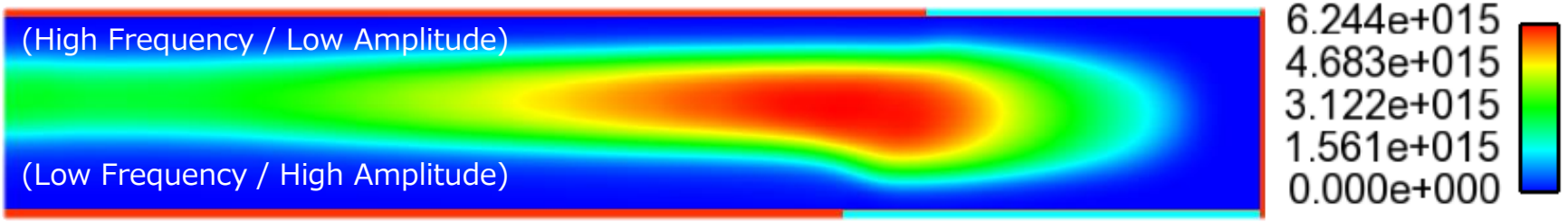


- ✓ Particle in chamber become a steady state on about 1×10^{-5} seconds, then generation and annihilation rate of particles are balanced.

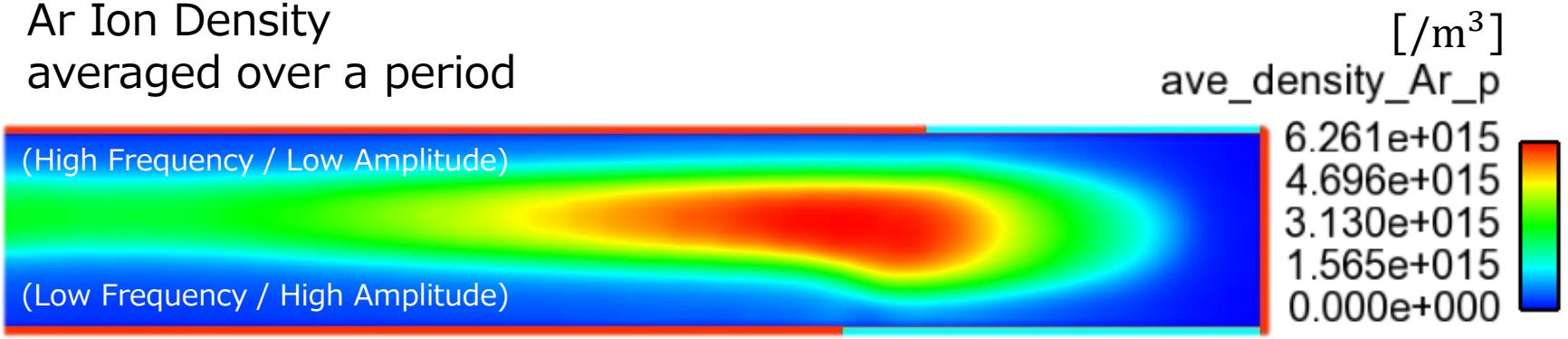


Density

Electron Density
averaged over a period

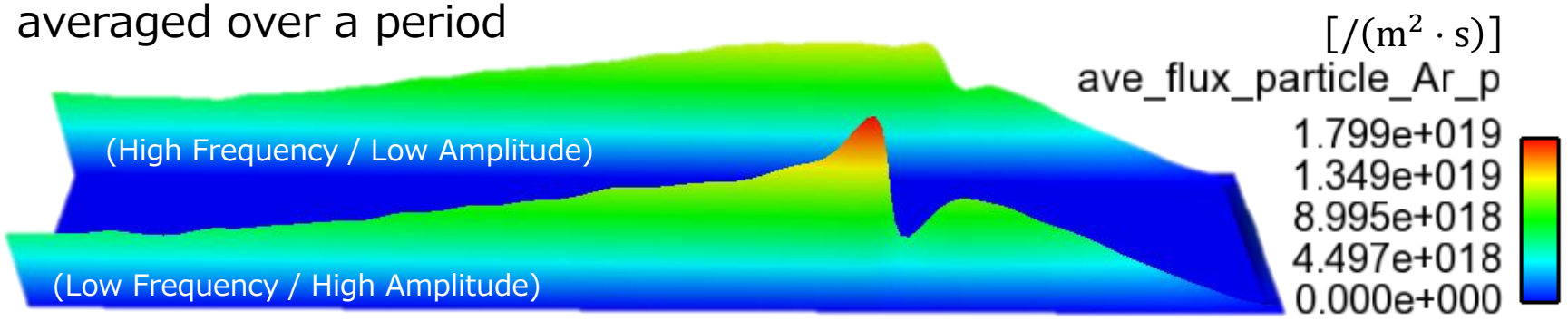


Ar Ion Density
averaged over a period

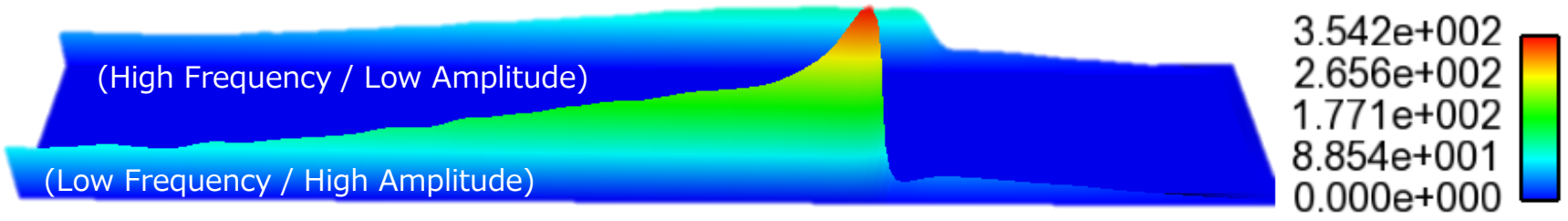


Ion Flux

Ar Ion Particle Flux
averaged over a period



Ar Ion Energy Flux
averaged over a period



- ✓ Particle-PLUS can analyze phenomenon of sputtering by using these fluxes.