

**Dark Current Simulation in High Gradient Accelerating Structure, N. AKASAKA, KEK** - The dark current generated in high gradient disc-loaded accelerating structure has been a major concern for projected high energy linear collider. In order to determine whether it is really a problem, the dark current was simulated numerically. In the simulation, electrons start from the wall of the accelerating structure with an initial velocity of 0. Their subsequent motion was tracked by solving the equation of motion with Runge-Kutta method until they hit the wall or get out of the accelerating structure. The SAD program was used after the electrons exit the accelerating structure. In SAD, accelerating structures and Q magnets are included. The dark currents are expected to be largely deflected by the Q magnets and strike the vacuum chamber because they have lower energy than the nominal one. In the case of 3/4p accelerating structure for JLC C-band with the gradient 50 MV/m, the result showed that after 18 Q magnets most of the dark current particles are lost by hitting the wall and that the remaining number of particles is well under acceptable level.