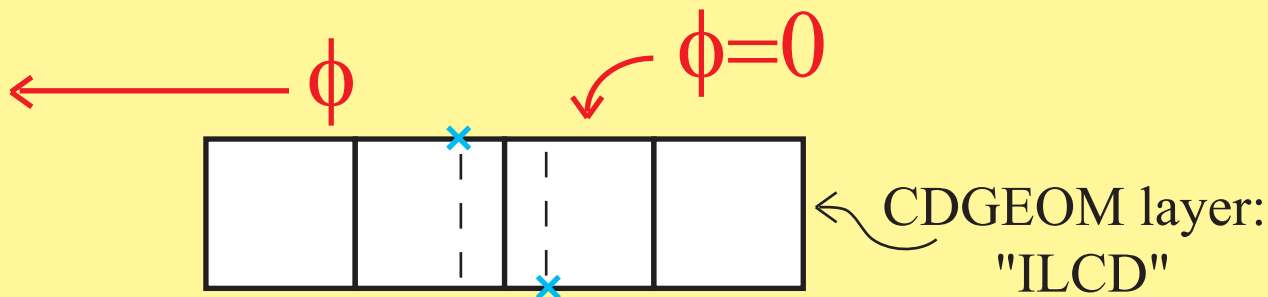


Figure 3 tpc_ionization_centers

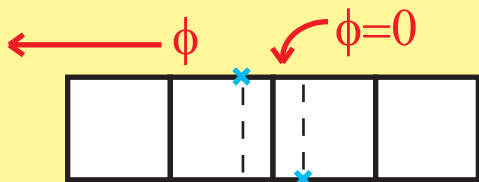


$\{ \phi_{\text{exit}}, z_{\text{exit}} \}$ $\{ \phi_{\text{enter}}, Z_{\text{enter}} \}$

define: $\phi_{\text{diff}} = \phi_{\text{exit}} - \phi_{\text{enter}}$

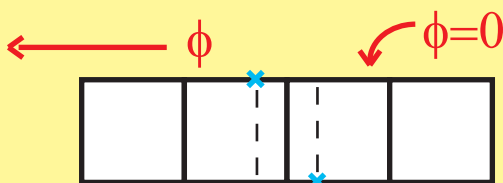
in this example, $0 < \phi_{\text{diff}} < \pi$; $\phi_{\text{start}} = \phi_{\text{enter}}$;

$\phi_{\text{stop}} = \phi_{\text{exit}}$



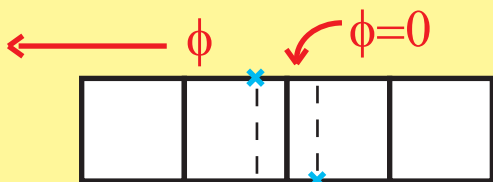
$\{ \phi_{\text{exit}}, z_{\text{exit}} \}$ $\{ \phi_{\text{enter}}, Z_{\text{enter}} \}$

in this example, $-2\pi < \phi_{\text{diff}} < -\pi$; $\phi_{\text{start}} = \phi_{\text{enter}}$;
 $\phi_{\text{stop}} = \phi_{\text{exit}} + 2\pi$



$\{ \phi_{\text{enter}}, Z_{\text{enter}} \}$ $\{ \phi_{\text{exit}}, z_{\text{exit}} \}$

in this example, $-\pi < \phi_{\text{diff}} < 0$; $\phi_{\text{start}} = \phi_{\text{exit}}$;
 $\phi_{\text{stop}} = \phi_{\text{enter}}$



$\{ \phi_{\text{enter}}, Z_{\text{enter}} \}$ $\{ \phi_{\text{exit}}, z_{\text{exit}} \}$

in this example, $\pi < \phi_{\text{diff}} < 2\pi$; $\phi_{\text{start}} = \phi_{\text{exit}}$;
 $\phi_{\text{stop}} = \phi_{\text{enter}} + 2\pi$

define ϕ_{start} and ϕ_{stop}
from the inputs,
 ϕ_{enter} and ϕ_{exit} ,

such that $\phi_{\text{stop}} > \phi_{\text{start}}$.
Allow $\phi_{\text{stop}} > 2\pi$.