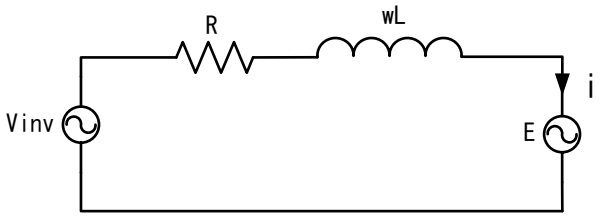
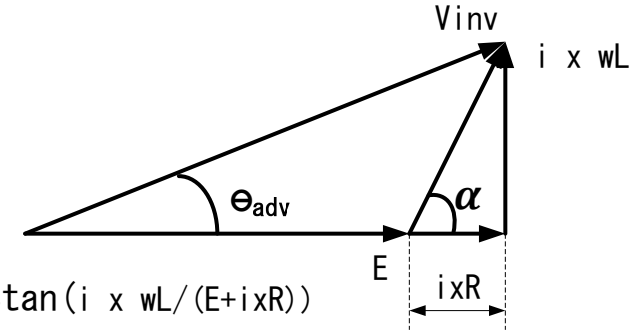
PMSM motor per phase equivalent model





$\Theta_{adv} = \arctan(i \times wL/(E+ixR))$

Here, all quantities are in per phase
i- Stator winding current in Amp
w- motor electric speed in rad per sec
R- stator winding resistance in ohm
L- stator winding inductance in henry
Vinv- fundamental component applied voltage from 3-phase H-bridge inverter at w rad per sec
Θadv- phase angle lead between Vinv fundamental and back-emf E

$\alpha = \arctan(wL/R)$

Here,

α is stator impedance angle, represent LR time constant of motor