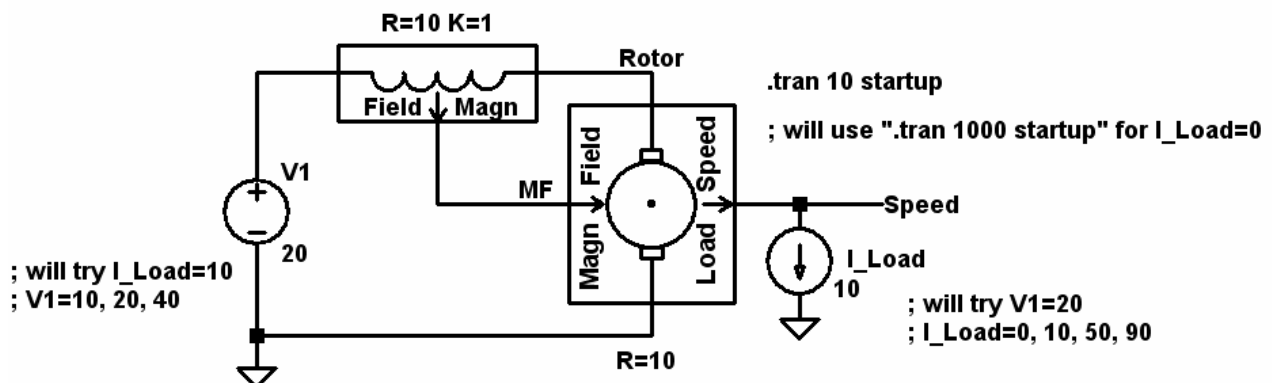
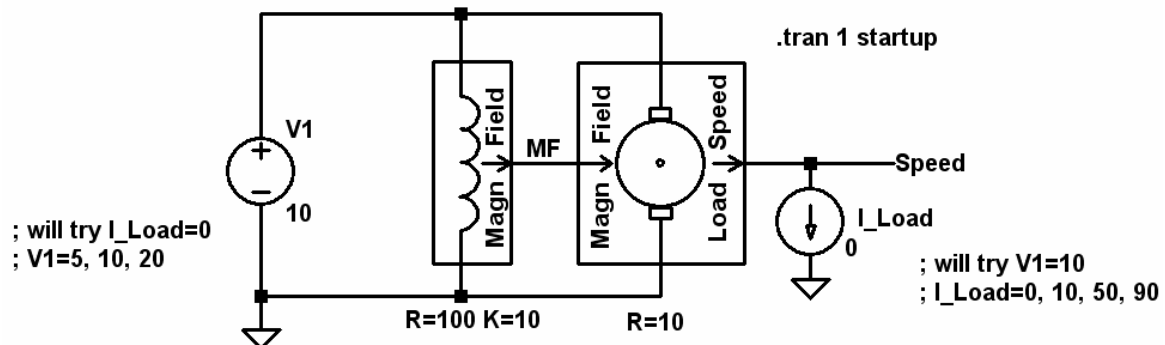
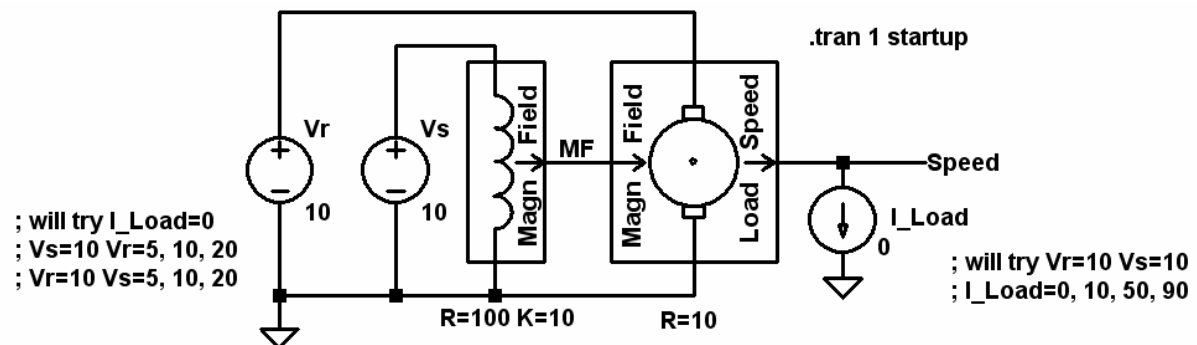
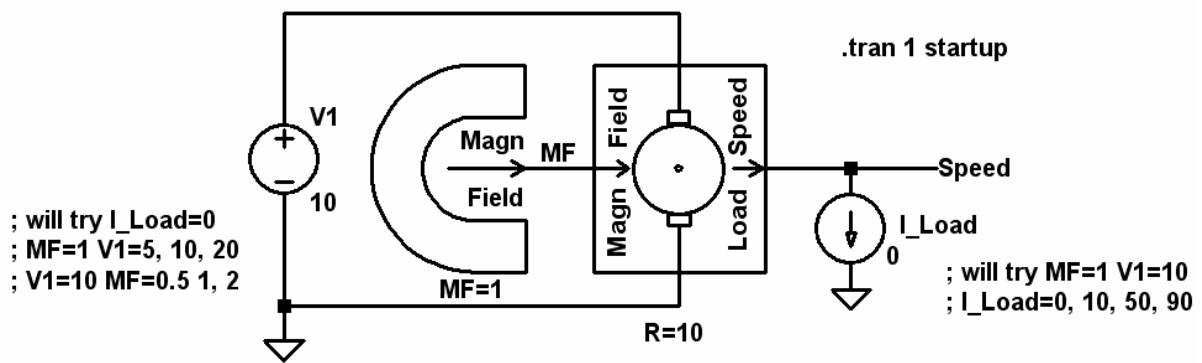
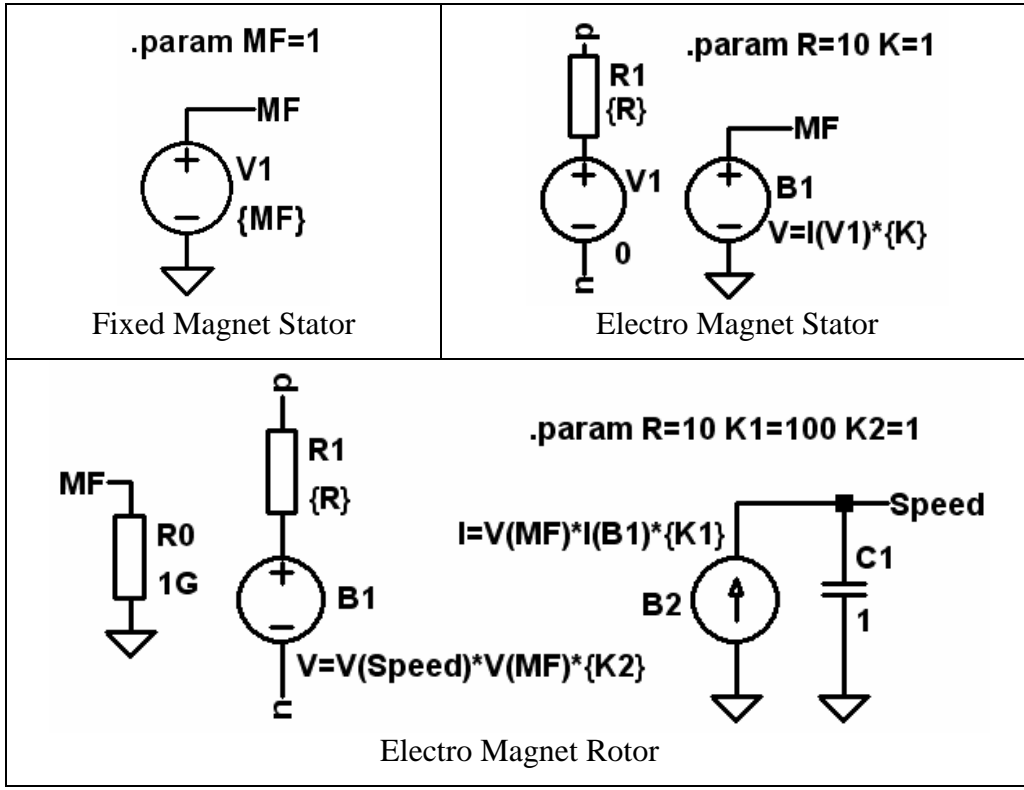


DC-motor Rotor's and Stator's Power Attachment study

Kubov V.I. 2014





Stator and Rotor Spice-models

a) $B_{stator} = const$;

b) $B_{stator} = \frac{I_{stator} \cdot N_{stator}}{\Re \cdot S_{stator}}$; $I_{stator} = \frac{V_{stator}}{R_{stator}}$;

$$I_{rotor} = \frac{V_{rotor} - E_{rotor}}{R_{rotor}} ; E_{rotor} = B_{stator} \cdot S_{rotor} \cdot N_{rotor} \cdot \omega_{rotor} ; \omega_{rotor} = 2\pi \cdot n_{rotor} ;$$

$$M_{rotor} = B_{stator} \cdot S_{rotor} \cdot N_{rotor} \cdot I_{rotor} ;$$

$$\frac{d\omega_{rotor}}{dt} = \frac{M_{rotor} - M_{Load}}{J_{rotor}} ; \omega_{rotor} = \int \frac{d\omega_{rotor}}{dt} \cdot dt ;$$

$$M_{rotor} = M_{Load} \rightarrow \frac{d\omega_{rotor}}{dt} = 0 ; \omega_{rotor} \leftarrow E_{rotor} = V_{rotor} - I_{rotor} \cdot R_{rotor}$$

$$P_{Load} = M_{Load} \cdot \omega_{rotor} = M_{Load} \cdot 2\pi \cdot n_{rotor} ;$$

$$I_{rotor} = \frac{M_{rotor}}{B_{stator} \cdot S_{rotor} \cdot N_{rotor}} ; E_{rotor} = V_{rotor} - I_{rotor} \cdot R_{rotor} ; \omega_{rotor} = \frac{E_{rotor}}{B_{stator} \cdot S_{rotor} \cdot N_{rotor}} ;$$