Stepper Motors: Acceleration and torque curves

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1 Introduction

2 Motor torque and "Coil pendulum"

Taking a stepper motor with two different coils A and B with the charging curve being defined as

$$i_c(t) = I_m(1 - e^{\frac{t}{\tau}}) \quad \tau = \frac{I_m L}{U} \tag{1}$$

with I_M being the maximum current flowing though the coil, L being the inductivity and U being the volage applied to the coil. Considering the torque has a linear proportionality to the current flowing though the coil:

$$T(t) \leftrightarrow i(t)$$

the following