Adaptive Control – Exercise Session 7

1. Consider the system

$$G(q) = \frac{0.09516}{q - 0.9048}.$$

It is controlled using ILC (see Figure 1) such that the control signal at an iteration k is given by:

$$u_{k+1}(t) = u_k(t) + L(q)e_k(t)$$
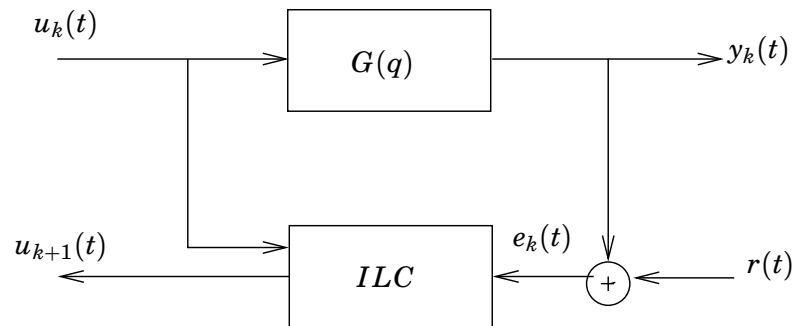
where $e_k(t) = r(t) - y_k(t)$.

Figur 1 AN ILC feedback system.

Study the convergence of the ILC iterations for $L(q) = 1$ and $L(q) = q$.

Hint: The Nyquist plots of $G(q)L(q)$ for the two chosen L are shown in Figure 2.
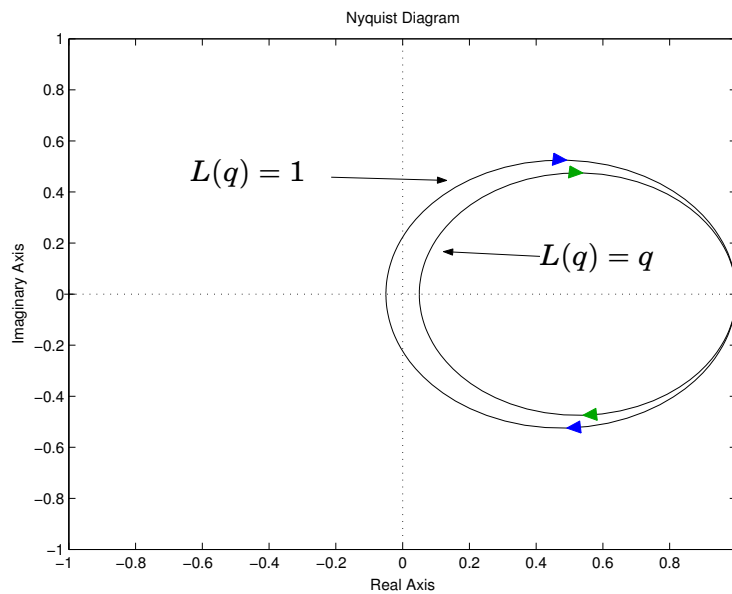

Figur 2 Nyquist plots for $G(q)L(q)$.