1. For the least squares algorithm (with normalizations, and covariance resetting),

\[ \phi = \delta = \frac{-x P w e_1}{1 + \epsilon_0 w^T w} \quad x > 0, \quad \epsilon_0 > 0 \] constants

\[ \dot{\phi} = -x P w w^T P \quad \frac{1}{1 + \epsilon w^T P w} \]

\[ P(t_0) = P(t_0^+) = k_0 \quad \| z \| > 0 \] (resetting)

where \( t_0 = \{ t | \lambda_{\text{min}} (P(t)) \leq k_1 < k_0 \} \).

Suppose \( w : \mathbb{R}_+ \rightarrow \mathbb{R}^{2n} \) is piecewise continuous. Then

(i) \( e_1 \frac{\epsilon}{\sqrt{1 + \epsilon_0 w^T P w}} \in L^2 \cap L^\infty \)

(ii) \( \phi \in L^\infty, \quad \dot{\phi} \in L^2 \cap L^\infty \)

(iii) \( \beta = \frac{\phi^T w}{1 + \| w \|_\infty} \in L^2 \cap L^\infty \)

2. READ SAstry-Bodson till end of section 2.5 (page 76)