Lec. 23-b-TIE

Wednesday, July 31, 2024 4:50 AM

$$\left| R(P, \dot{\Sigma}) - L(P) \right| < \varepsilon/4$$

and $$\left| R(P, \bar{\Sigma}) - U(P) \right| < \varepsilon/4$$

so, by the Triangle inequality. we get

$$\left| U(P) - L(P) \right| = \left| U(P) - R(\bar{\Sigma}) + R(\bar{\Sigma}) - R(\dot{\Sigma}) + R(\dot{\Sigma}) - L \right|$$

$$\leq \left| U(P) - R(\bar{\Sigma}) \right| + \left| R(\bar{\Sigma}) - R(\dot{\Sigma}) \right| + \left| R(\dot{\Sigma}) - L \right|$$

$< \varepsilon/4$ $< \varepsilon/2$ $\varepsilon/4$

$\Rightarrow$ RHS $< \varepsilon$

this shows $f \in \mathcal{R} \Rightarrow f \in \mathcal{D}$.