L_2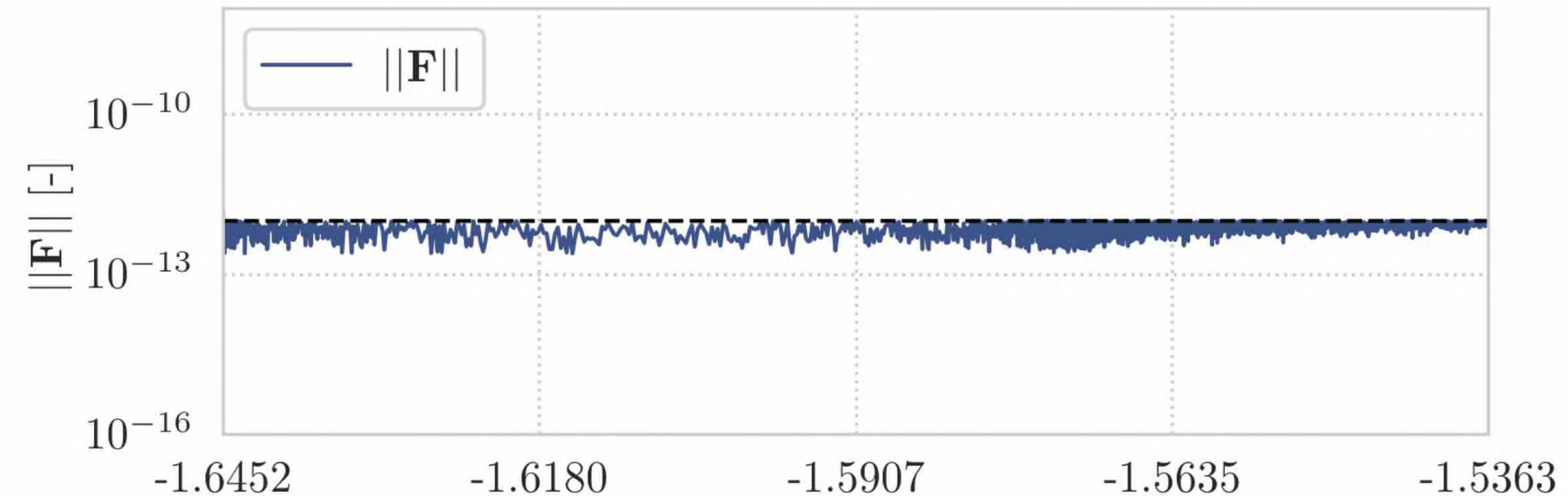 Horizontal Lyapunov ($a_{lt} = 0.10$, $\alpha = \frac{5}{3}\pi$ rad) - Periodicity constraints verification