

$$+ \|(T-s)^{\beta-1}\|_{L^{\frac{m_2}{m_2-\beta}}([0,T])} \frac{\Gamma(\beta)(\int_0^T \rho'_n \frac{m_2}{\beta}(s)ds)^{\frac{\beta}{m_2}}}{\longrightarrow 0}$$