1171-42-80 **Seungly Oh*** (`seungly.oh@wne.edu`), 1215 Wilbraham Rd, Springfield, MA 01119-2612, and **Xinfeng Wu** (`wuxf@cumtb.edu.cn`), Department of Mathematics, China University of Mining & Technology, Beijing, Beijing 100083, Peoples Rep of China. *Fractional Leibniz Rules in Lebesgue Spaces with Polynomial Weights.* Preliminary report.

We consider various versions of fractional leibniz rules (also known as Kato-Ponce inequalities) with weight $\langle x \rangle^a$ for $a \geq 0$. We will show that Kato-Ponce estimates with the inhomogeneous Bessel potential, $J^s = (1 - \Delta)^{s/2}$, does not require the classical Muchkenhoupt weight condition, also known as the A_p condition. In particular, our main result demonstrates that the inequality is valid for all $a \geq 0$ for a sharp range for the degree s of the fractional differential operator J^s. (Received August 08, 2021)