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Boundedness of Marcinkiewicz integral with rough kernel on Triebel-Lizorkin spaces

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Motivation

- Triebel-Lizorkin boundedness for Marcinkiewicz integral (without radial function in its kernel) has been well studied.
- With the radial function in the kernel, very strong additional restriction should be posed on the operator itself in our previous work, to ensure the Triebel-Lizorkin boundedness.

General steps

- Using an equivalent characterization of Triebel-Lizorkin space to turn the boundedness into some vector Lebesgue boundedness
- Applying the theory of vector-valued singular integral to treat the roughness of the kernel of the operator studied
- Proving better estimate for the reduced operator

Conclusions

- Even with the radial function in its kernel, the general steps can still be modified to adapt to our case.

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