

# Fourier integrals and Sobolev embedding on rearrangement-invariant quasi-Banach function spaces

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## Abstract

We extend the mapping properties for the fractional integral operators, the convolution operators, the Fourier integral operators and the oscillatory integral operators to rearrangement-invariant quasi-Banach functions spaces (r.i.q.B.f.s.). We also generalize the Fourier restriction theorem and the Sobolev embedding theorem to r.i.q.B.f.s.

We obtain the above results by introducing two families of r.i.q.B.f.s. Furthermore, these two families of r.i.q.B.f.s. also give us some embedding and interpolation results of Triebel-Lizorkin type spaces and Hardy type spaces built on r.i.q.B.f.s.