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On the well-posedness of the incompressible Euler equations in a larger space of Besov-Morrey type. (English) [Zbl 07452263](#)

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Summary: We obtain a local-in-time well-posedness result and blow-up criterion for the incompressible Euler equations in a new framework, namely Besov spaces based on modified weak-Morrey spaces, covering critical and supercritical cases of the regularity. In comparison with some previous results and considering the same level of regularity, we provide a larger initial-data class for the well-posedness of the Euler equations. For that matter, following the Chemin approach, we need to prove some properties and estimates in those spaces such as preduality, the action of volume preserving diffeomorphism, product and commutator-type estimates, logarithmic-type inequalities, among others.

MSC:

- [35Q31](#) Euler equations
- [35Axx](#) General topics in partial differential equations
- [35Q31](#) Euler equations
- [42B35](#) Function spaces arising in harmonic analysis
- [46E30](#) Spaces of measurable functions (L^p -spaces, Orlicz spaces, Köthe function spaces, Lorentz spaces, rearrangement invariant spaces, ideal spaces, etc.)
- [46E35](#) Sobolev spaces and other spaces of “smooth” functions, embedding theorems, trace theorems
- [76B03](#) Existence, uniqueness, and regularity theory for incompressible inviscid fluids

Keywords:

Euler equations; well-posedness; Besov-type spaces; blow up; volume-preserving map; commutator estimates; Morrey-type spaces

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