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Harmonic analysis and maximal regularity

The aim of this talk is to discuss the maximal regularity of the heat equation in Morrey spaces based on the 2010 paper by Ogawa and Shimizu. What differs from their work is that the Fourier multipliers are used instead of interpolation. Some recent studies on the real interpolation show that Morrey spaces do not interpolate well. The estimate needed in this paper is the local means. The local means is transformed into the form which is suitable in the context of the maximal regularity. As an application, the Cauchy problems for the Keller–Segel system are studied.

The function spaces used in this paper correspond to the scaling critical case for the Keller–Segel system. Some observation shows that why Besov–Morrey spaces are suitable for the study of maximal regularity and that some other related spaces are not.