VANISHING THEOREMS FOR THE DISCRETELY SELF-SIMILAR SOLUTIONS TO THE EULER AND THE MHD EQUATIONS

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ABSTRACT

Discretely self-similar solution is a generalized notion of the self-similar solution, which is equivalent to the time-periodic solution to the self-similar form of the Euler equations. We deduce sufficient conditions to guarantee that the solution is identically zero. More specifically, conditions for the decays of the velocity at spatial infinity implies that the solution is zero(Liouville type theorems). Also, conditions of the velocity at the origin implies that the solution vanishes on the whole of $\mathbb{R}^n$ without decay condition at spatial infinity(unique continuation type theorems).