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Theoretical and numerical studies of Vishniac instability in supernova remnants CÉCILE CAVET, HUNG CHINH NGUYEN, CLAIRE MICHAUT, LUTH, Observatoire de Paris, CNRS, EMERIC FALIZE, SERGE BOUQUET, CEA/DIF, DPTA — In this work, the Vishniac instability is first of all theoretically studied in supernova remnants. This instability is sometimes invoked to explain fragmentation of interstellar medium, but its role is not correctly demonstrated. Conditions and assumptions required for the instability growth are detailed and explained. In addition, an experimental feasibility of the Vishniac instability combined with a radiative shock experiment is examined with the high-power laser facility, i.e., LIL (Bordeaux, France). Another part of this study is also to simulate this instability, because we would compare its numerical growth rate with analytical theory which we derived as an extension of the initial approach by Vishniac. To lead this numerical work we have developed an hydrodynamic code (called HYDRO-MUSCL) and we will show new results.

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