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## On the probing of non-homogeneous magnetic fields in radio supernovae

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Observations and numerical simulations indicate that non-homogeneous magnetic fields are ubiquitous in astrophysical settings. However, in most models of astrophysical non-thermal radiation they are not treated as non-homogeneous. Here we present our analysis of non-homogeneous magnetic field of radio supernovae. Flat topped radio spectra around synchrotron self-absorption frequency points to a non-singular value of magnetic field. Building upon that, we present a numerical scheme to solve the integral equation related to synchrotron self-absorption using two different inverse methods present in scipy Python library: LSMR (an iterative method) and NNLS (non-negative least square). We present the limitations of LSMR as a method which works well only with smooth magnetic field distribution functions, while NNLS works well only in the cases of the singular or discrete magnetic field value. We open the discussion about the influence of non-homogeneous magnetic fields on the radiation spectra of other known astrophysical phenomena.

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