Abstract ： With Pressure Wave Propagation (PWP) method, for measuring space charge distribution in solid dielectrics, the short circuit current can be obtained. It can be described by a Fredholm integral equation of the first kind. Usually, it is too ill-posed to obtain the space charge distribution directly. This paper presents a new numerical deconvolution method, from which the distribution of space charge density can be obtained. Through introducing wavelet packet filters, high order polynomial extrapolation technique, the calibration of pressure wave can be gained. With Tikhonov regularization technique combined with iterative method, the real distribution of space charge in solid dielectrics is obtained, and the distribution of electric field can be obtained too. The calculation result for planar LDPE sample under DC field indicates that this new deconvolution method is successful