Regularity of solutions of elliptic problems with Dirac measures as data.

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In this talk we study the Laplace equation with Dirac right-hand side. We prove some regularity results in a scale of weighted Sobolev spaces, the weight being the distance to the support of the right-hand side. Model situations in dimension three are treated by using Fourier, Laplace or Mellin technique that reduces the problem to a Helmholtz problem in two dimension. Hence the key point stays on estimates for the solution of the Helmholtz problem in standard or weighted Sobolev spaces which are uniform with respect to the parameter.

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