

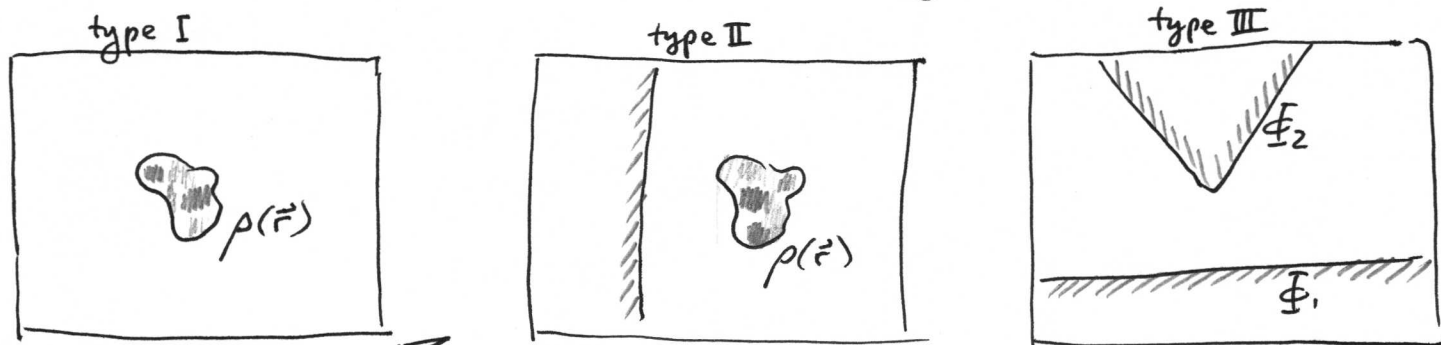
MID TERM REVIEW

PH631

Instructor
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DAY 17

Find $\Phi(\vec{r})$ to satisfy $\nabla^2 \Phi = -\rho/\epsilon_0$



(a) Potential due to point charge

(b) Green's Function Integral
a.k.a "chop & add" *

(c) Gauss's Law *

(d) Multipole expansion

(linked to summation of orthogonal fns)

(e) Method of Images \blacklozenge
(convert to type I)

(f) Finite element numerical relaxation method.

(g) Summation of orthogonal fns \blacklozenge
(the final steps in the separation of variables method).

* Requires superposition principle

* Requires symmetry arguments

\blacklozenge Requires uniqueness thm & matching boundary conditions.

APPLICATIONS :

- Calculate forces on charges

- Calculate capacitance

- Figure out spatial distribution of charge (type II & type III problems)