ID de Contribution: **13**   Type: **Non spécifié**

Mathematics of the Faraday cage

mardi 20 janvier 2015 11:15 (45 minutes)

Everybody has heard of the Faraday cage effect, in which
a wire mesh does a good job of blocking electric fields.
Surely the mathematics of such a famous and useful phenomenon
has been long ago worked out and written up in the textbooks?

It seems to be not so. One reason may be that that the
effect is not as simple as one might expect: it depends on
the wires having finite radius. Nor is it as strong as one
might imagine: the shielding improves only linearly as the
wire spacing decreases.

This talk will present results by Jon Chapman, Dave
Hewett and myself including (a) numerical simulations,
(b) a theorem proved by conformal mapping, (c) a continuous
model derived by multiple scales analysis, (d) a discrete
model derived by energy minimization, (e) a connection with
the periodic trapezoidal rule for analytic integrands, and
(f) a physical explanation.

Auteur principal: TERFETHEN, Nick (University of Oxford)

Orateur: TERFETHEN, Nick (University of Oxford)