Linearization of the EIT forward promlem

$$\underline{J}\,\underline{s} = \delta \underline{V}$$

J — Jacobian matrix (matrix of sensitivity coefficient)

s — vecter of coefficient of unknown conductivity

$\delta \underline{V}$ is a vector of the change of voltage ~~vectors~~ measurements.

delta

J is precalculable

J is a matrix of $\frac{\partial V}{\partial s_k} = -\int_\Omega \varphi_i \nabla u_i \nabla v_j \, dx$

the field at current projection

through the field of we drive current the ~~___~~ measuring electrodes pairs.

$\frac{\partial V}{\partial I_k}$ = if J then $JI = \delta V$

then I vecter of coefficient of unknown current distribution.

$\overset{\checkmark}{J}\overset{?}{s} = \overset{\checkmark}{\delta V}$ ⇒ get s ⇒ update best guess for conductivity distribution ⇒ solve forward problem ⇒ the predicted voltage measurements ⇒ Compare that with real Voltage measurements ⇒ get δV and upate the s again

Repeatedly solve linear problem ⇒ Newtown's method

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