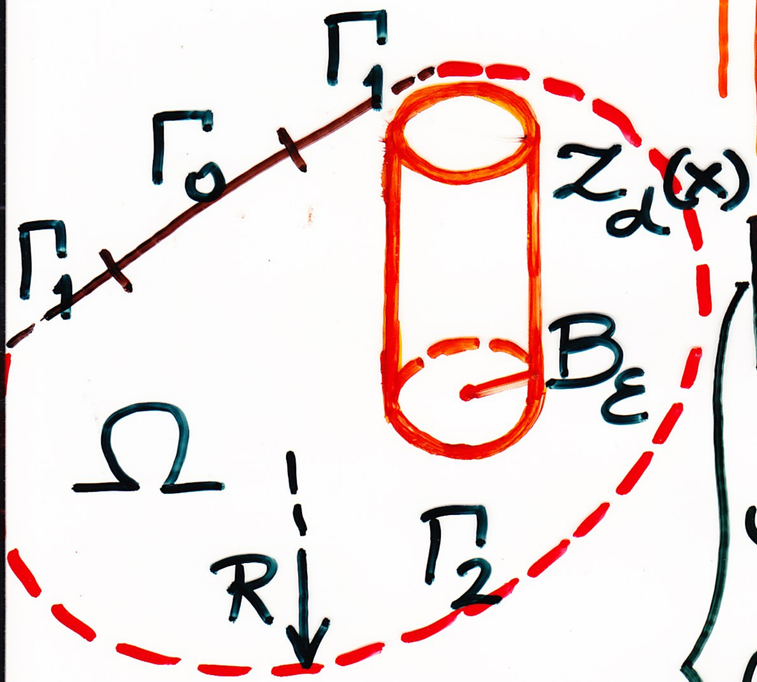
PULSE COMPRESSION



$$\begin{cases} \left[\Delta - \frac{1}{c^2}\left(\frac{\partial^2}{\partial t^2} + \omega_p\right)\right]\psi = 0 \\ x \in \Omega \, ; \, t \geq 0 \\ \psi|_{\Gamma_0} = v \, ; \, \psi|_{\Gamma_1} = 0 \\ \lim\limits_{R\to\infty} R\left(\frac{\partial \psi}{\partial R} + \frac{\partial \psi}{\partial t}\right)\Big|_{\Gamma_2} = 0 \\ \psi(x,0) = \frac{\partial \psi}{\partial t}(x,0) = 0 \\ \forall x \in \Omega \cup \Gamma \end{cases}$$

$$ck = \sqrt{\omega^2 - \omega_p^2}$$

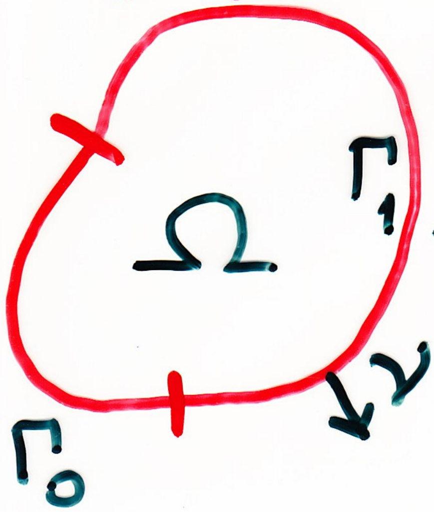
$$z_d(x) := \frac{A}{\varepsilon^3} \cdot \chi_{B_\varepsilon}$$

$$J(v) = \int_\Omega d\Omega \, |\psi(x,T;v) - z_d|^2 + \int_{\Sigma_0} d\Sigma \, N \bar{v} v$$

$$N(x) \geq 1 \, ; \, x \in \Gamma_0 \times [0,T] := \Sigma_0$$

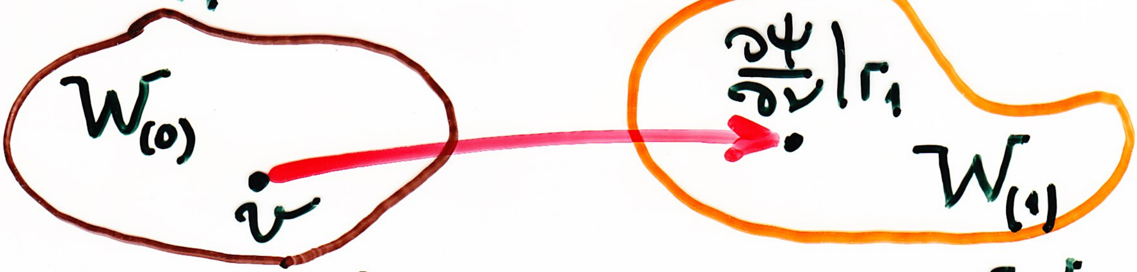
3-D STATIONARY FIELD

$\exp - i\omega t$

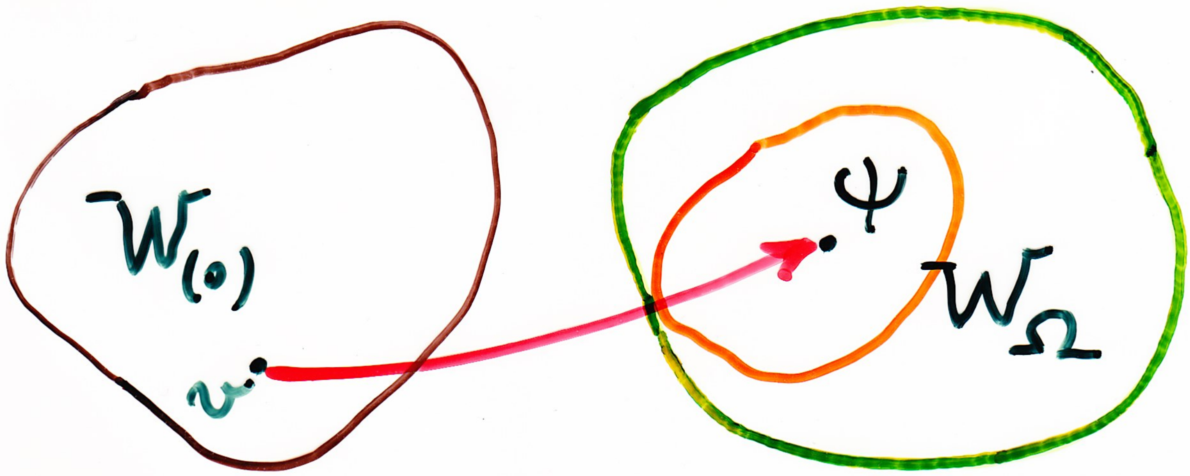


$$\begin{cases} (\Delta + k^2 n^2(x))\psi = 0; \ x \in \Omega \\ \psi|_{\Gamma_0} = v \in W_{(0)} = L^2(\Gamma_0) \\ \psi|_{\Gamma_1} = 0 \end{cases}$$

$$C_1\psi := \frac{\partial\psi}{\partial\nu}\Big|_{\Gamma_1} \Rightarrow \overline{\left\{\frac{\partial\psi}{\partial\nu}(x;v);\ x\in\Gamma_1;\ v\in W_{(0)}\right\}} = W_{(1)}$$



$$C_2\psi := \psi|_{\Omega} \Rightarrow \left\{\psi(x;v);\ x\in\Omega;\ v\in W_{(0)}\right\} \subset W_{\Omega}$$



"THE LIMITS OF 3-D DISPLAY"

(A.W. LOHMANN)

DUALITYYTILAUD

$$H\psi=0 \quad ; \quad x\in\Omega \quad ; \quad H\varphi=0$$

$$\left\{\begin{array}{ll} \psi|_{\Gamma_0}=v & \varphi|_{\Gamma_0}=0 \\ \psi|_{\Gamma_1}=0 & \varphi|_{\Gamma_1}=b \\ C\psi=\dfrac{\partial\psi}{\partial\nu}\Big|_{\Gamma_1} & \text{Ɔ}\varphi=\dfrac{\partial\varphi}{\partial\nu}\Big|_{\Gamma_0} \end{array}\right\}$$

$$S:=\left\{C\psi(x,v);\, v\in L^2(\Gamma_0)\right\}\subset W_{(1)}$$

$$\left\langle\frac{\partial\psi}{\partial\nu}, b\right\rangle=0,\ \forall\frac{\partial\psi}{\partial\nu}\in S \Rightarrow \left\langle\frac{\partial\varphi}{\partial\nu}\Big|_{\Gamma_0}, v\right\rangle=0\ \forall v\in W_{(0)}$$

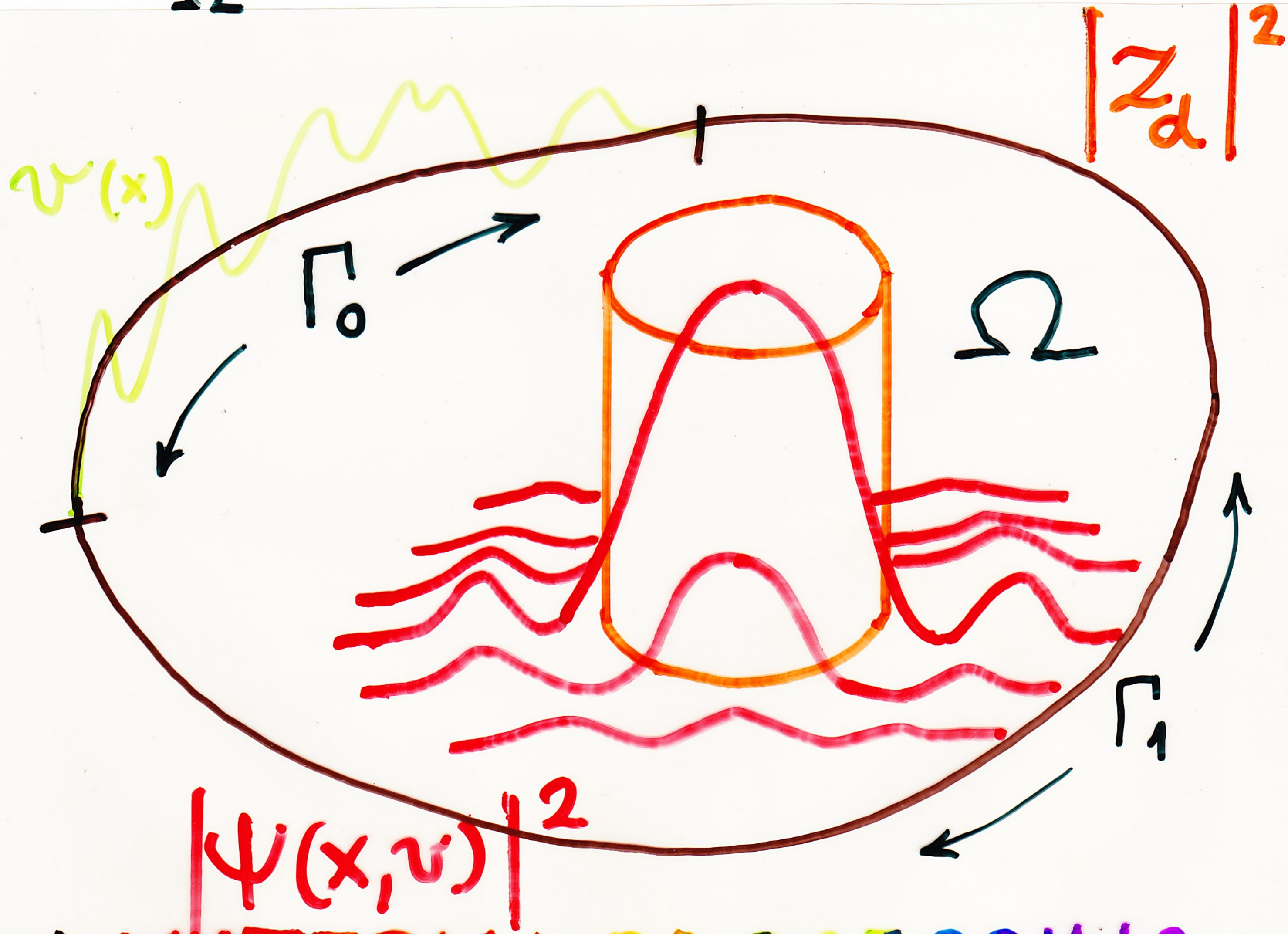
$$\Downarrow$$

$$\overline{S}=W_{(1)} \qquad \operatorname{Ker}\text{Ɔ}=0|_{\Gamma_1}$$

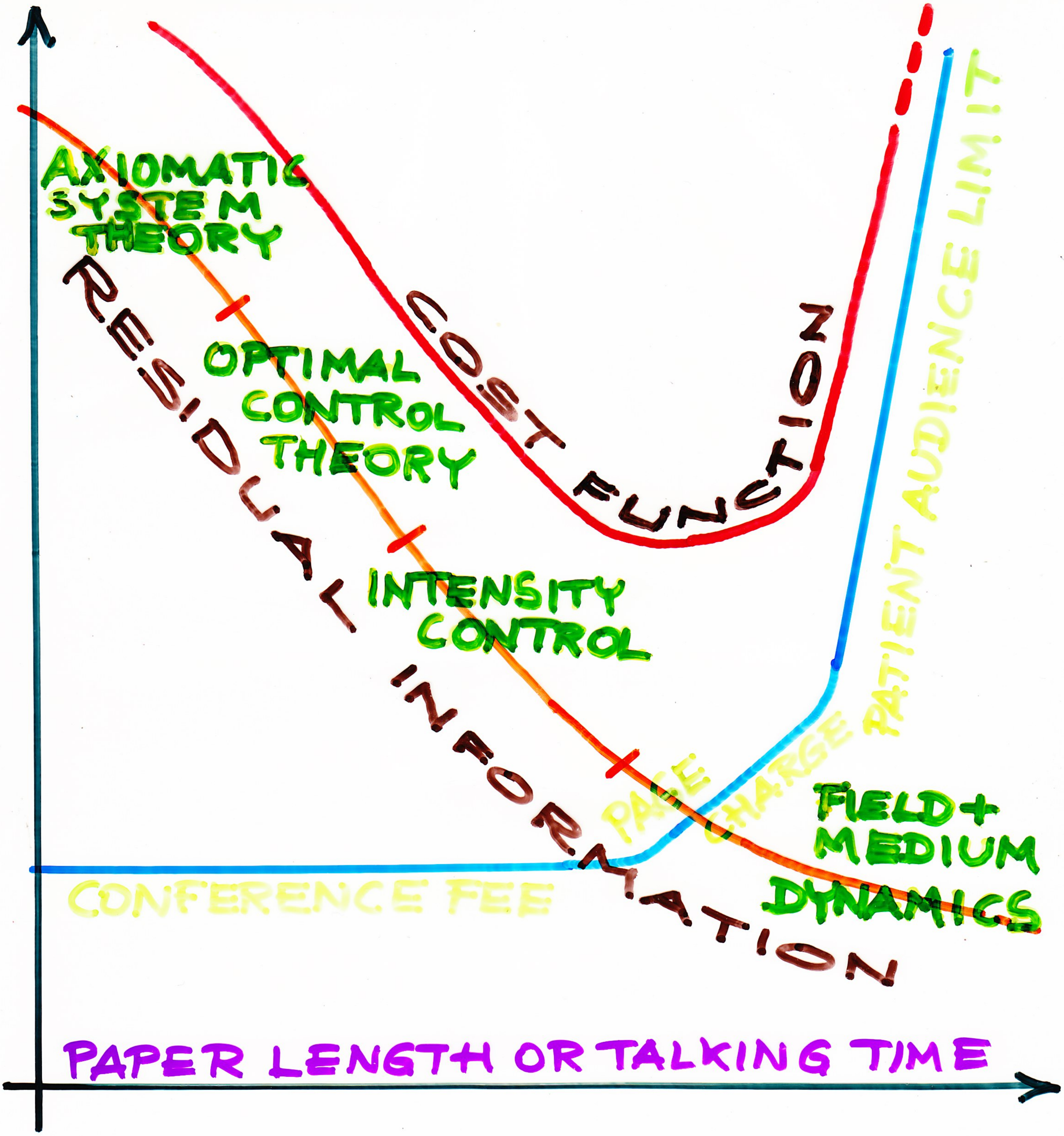
OPTIMAL CONTROL FOR 3-D MONOCHROMATIC FIELD

$$C_3\psi := |\psi(x)|^2$$

$$J(v) = \int_\Omega d\Omega \left[|\psi(x,v)|^2 - |z_d(x)|^2 \right]^2 + (Nv, v)$$



3-D MATERIAL PROCESSING


AXIOMATIC SYSTEM THEORY
OPTIMAL CONTROL THEORY
INTENSITY CONTROL
FIELD + MEDIUM DYNAMICS
RESIDUAL INFORMATION
COST FUNCTION
PATIENT AUDIENCE LIMIT
PAGE CHARGE
CONFERENCE FEE
PAPER LENGTH OR TALKING TIME