

# Compactness (cont.) <sup>-7</sup>

$u \in \mathcal{W}$

[ pointwise convergence of  $u_i \in \mathcal{W}$   
to  $u$  a.e. on  $I^2 \Rightarrow L_1$ -convergence ]

Choose  $\kappa \stackrel{> 3/\varepsilon}{\text{s.t.}} \|u - u_\kappa\|_1 < \varepsilon/3$

Choose  $n_0$  s.t.  $\forall n > n_0 \ \|u_\kappa - f_{n,\kappa}\|_1 < \varepsilon/3$

$\forall n > n_0$ :  $\delta_\square(u, f_n) \leq \delta_\square(u, u_\kappa) +$   
 $+ \delta_\square(u_\kappa, f_{n,\kappa}) + \delta_\square(f_{n,\kappa}, f_n) \leq$   
 $\leq \|u - u_\kappa\|_1 + \|u_\kappa - f_{n,\kappa}\|_1 + \delta_\square(f_{n,\kappa}, f_n) < \varepsilon.$

[  $\|f\|_\square = \sup_{S, T} \left| \int_{S \times T} f \right| \leq \int_{I \times I} |f| = \|f\|_1$  ]

