

$\Omega \subseteq \mathbb{R}^n$ DOMAIN



$u \in \mathcal{D}'(\Omega)$

$g \in \mathcal{C}^\infty(\Omega)$



$gu(\phi) = u(g\phi)$
 $\forall \phi \in \mathcal{C}_c^\infty(\Omega)$



$gu \in \mathcal{D}'(\Omega)$

$\Omega = \mathbb{R}^n$

$\psi \in \mathcal{C}_c^\infty(\mathbb{R}^n)$



$(u * \psi)\phi = u(\bar{\psi} * \phi)$
 $\forall \phi \in \mathcal{C}_c^\infty(\mathbb{R}^n)$
 $\bar{\psi}(\vec{x}) = \psi(-\vec{x})$



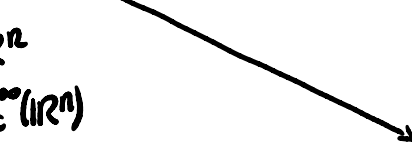
$u * \psi \in \mathcal{D}'(\mathbb{R}^n)$



Δ MULTIINDEX

$\mathcal{D}^\Delta(u * \psi) = (\mathcal{D}^\Delta u) * \psi = u * (\mathcal{D}^\Delta \psi)$

Δ ... MULTIINDEX



$\mathcal{D}^\Delta u(\phi) = (-1)^\Delta u(\mathcal{D}^\Delta \phi)$
 $\forall \phi \in \mathcal{C}_c^\infty(\Omega)$



$\mathcal{D}^\Delta u \in \mathcal{D}'(\Omega)$



$\mathcal{D}^\Delta u$ EXISTS FOR ALL MULTIINDEX Δ