Generalizations of the Cwikel Estimate for Integral Operators

Abstract

Let $(\mathcal{X}, d\varrho)$ and $(\mathcal{Y}, d\tau)$ be measurable spaces with σ-finite measures. The talk is devoted to investigation of linear operators $\mathbb{T}_{fg} : L_2(\mathcal{Y}, d\tau) \to L_2(\mathcal{X}, d\varrho)$ with kernel $f(x)t(x,y)g(y)$, $x \in \mathcal{X}$, $y \in \mathcal{Y}$ where $t(x,y)$ is the kernel of a linear bounded integral operator $T : L_2(\mathcal{Y}, d\tau) \to L_2(\mathcal{X}, d\varrho)$ and $f : \mathcal{X} \to \mathbb{C}$, $g : \mathcal{Y} \to \mathbb{C}$ are measurable functions. We will discuss the boundedness and compactness conditions and estimates for the singular values of the operators $\mathbb{T}_{fg}$. We also will consider the application of the developed theory to study differential operators.