A version of Gomilko-Shi-Feng Theorem in $L_p$ space

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In a Hilbert space $H$, the Gomilko-Shi-Feng Theorem states:

$-A$ generates a bounded $C_0$-semigroup on $H$ if and only there exists $C \geq 0$ such that for all $x \in H$, $x^* \in H^*$ and $\alpha < 0$ the following estimates are satisfied

$$-\alpha \int_{\mathbb{R}} \| R(\alpha + it, A)x \|^2 \leq C \|x\|^2$$

$$-\alpha \int_{\mathbb{R}} \| R(\alpha + it, A^*)x^* \|^2 \leq C \|x^*\|^2.$$

The aim of this talk is to give a similar characterization of generation of $\gamma$-bounded $C_0$-semigroup when the underlying space is a $L_p$ space with $1 < p < \infty$.


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