Gevrey and q-Gevrey asymptotic for some linear q-difference differential equations

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Let $(t, x) \in \mathbb{C}^2$. We study the following equation:

$$u + t\sigma_q^s u + t\sigma_q^s \partial_x u = f(t, x) + t\sigma_q^{s'} \partial_x^2 u \tag{E}$$

for $0 < s' < s$ where $f(t, x)$ is a holomorphic function in a neighborhood of the origin with $f(0, x) \equiv 0$.

In this talk we will introduce results of Gevrey and q-Gevrey asymptotic expansion of solutions for the equation (E).

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