

Semiclassical asymptotics for Bergman projections with Gevrey weights

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Abstract: In this talk, we discuss the semiclassical asymptotics for Bergman kernels in exponentially weighted spaces of holomorphic functions. We will first review a direct approach to the construction of asymptotic Bergman projections, developed by Deleporte–Hitrik–Sjöstrand in the case of real analytic weights, and Hitrik–Stone in the case of smooth weights. We shall then explore the case of Gevrey weights, which can be thought of as the interpolating case between the real analytic and smooth weights. In the case of Gevrey weights, we show that Bergman kernel can be approximated in certain Gevrey symbol class up to a Gevrey type small error, in the semiclassical limit. We will also introduce some microlocal analysis tools in the Gevrey setting, including Borel’s lemma for symbols and complex stationary phase lemma. This talk is based on joint work with Haoren Xiong.