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Jun Masamune* (masamune@wpi.edu), 100 Institute Road, Worcester, MA 01609-2280. *The Mosco convergence and the weak convergence of the Wiener measures for the weighted thin layers and boundaries.*

A domain containing highly weighted thin layers has been one of the most interesting models in both analysis and stochastic analysis. A natural problem is to consider the ϵ -neighborhood of the layers and to study the asymptotic behaviors of the spectral structures and the convergence of the associated Wiener measures as $\epsilon \rightarrow 0$.

There are many works devoted to the study of the stochastic process in this limit space; however, there are no results which study the weak convergence of the Wiener measures in this setting. The difficulty comes from the high concentration of the weight on the neighborhood of the layers, to which the existing approximation theories for Wiener measures do not apply. On the other hands, the convergence of the spectral structures via Mosco convergence with fixed speed measures has been studied since 1970s.

In the present paper, we establish the Mosco convergence with changing speed measures and show the tightness of the associated Wiener measures. Combining these two results, we obtain the weak convergence of the Wiener measures. (Received February 28, 2009)