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Shu-Cheng Chang* (scchang@math.ntu.edu.tw), Department of Mathematics, National Taiwan University, Taipei, 10617, Taiwan. *The CR Obata-Type Theorem in a Closed Pseudohermitian Manifold.*

In this talk, we will give a sharp lower bound estimate for diameter with respect to the adapted metric in a closed pseudohermitian manifold when a sharp lower bound estimate for the first positive eigenvalue of the sub-Laplacian is achieved. As consequences, we confirm the CR Obata Conjecture with respect to sub-Laplacian and Kohn Laplacian in a closed pseudohermitian manifold with an extra condition on covariant derivatives of torsion. (Received September 09, 2010)