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**Yu Qiao\*** (yqiao@snnu.edu.cn), School of Mathematics and Information Science, Shaanxi Normal University, Xi'an, Shaanxi 710119, Peoples Rep of China. *Neumann-Poincaré Operators on Polygonal Domains and Pseudodifferential Operators on Lie Groupoids.*

In this talk, we use an approach of pseudodifferential operators (and  $C^*$ -algebras) on Lie groupoids to study the double layer potentials on polygons. Let  $\Omega$  be a polygon in  $\mathbb{R}^2$  and denote by  $K$  the Neumann-Poincaré Operator associated to  $\Omega$  and the Laplace operator  $\Delta$ . We prove that  $\pm I + K$  are invertible between appropriate weighted Sobolev spaces. This invertibility result implies solvability results in weighted Sobolev spaces for the interior and exterior Dirichlet problem on  $\Omega$ . This joint work with Hengguang Li (Wayne State University). (Received January 14, 2019)