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**Mihran Papikian\*** (papikian@math.psu.edu), Department of Mathematics, Pennsylvania State University, University Park, PA 16802. *On the arithmetic of modular curves of  $\mathcal{D}$ -elliptic sheaves.*

Modular curves of  $\mathcal{D}$ -elliptic sheaves are the function field analogues of Shimura curves. We study the existence of rational points on modular curves of  $\mathcal{D}$ -elliptic sheaves over local fields and the structure of fundamental domains of these curves in the Bruhat-Tits tree. We discuss some applications which include finding presentations for arithmetic groups arising from quaternion algebras over function fields and finding the equations of modular curves of  $\mathcal{D}$ -elliptic sheaves. (Received August 31, 2009)