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**Amalia Culiuc\*** ([amalia@math.brown.edu](mailto:amalia@math.brown.edu)), 151 Thayer st, Providence, RI 02912. *The  $A_2$  conjecture in vector-valued function spaces.*

The famous  $A_2$  conjecture states that if  $T$  is a Calderon-Zygmund operator acting on the weighted space  $L_2$  of scalar-valued functions with  $A_2$  weights  $w$ , then  $T$  is bounded on  $L_2(w)$  and the bound depends linearly on the  $A_2$  characteristic. While this conjecture was settled in 2012, its equivalent in the space of vector-valued functions with matrix weights remains open. In this talk we investigate the boundedness of various Calderon-Zygmund operators on weighted vector-valued function spaces and discuss some of the challenges to extending the  $A_2$  conjecture to a more general setting. Joint work with Kelly Bickel, Sergei Treil, and Brett Wick (Received January 18, 2016)