1167-15-194 **Mackenzie Cox**, **Weston M. Grewe**, **Grace K. Hochrein** and **Linda J. Patton*** (lpatton@calpoly.edu), Mathematics Department, Cal Poly, San Luis Obispo, CA 93402, and **Ilya M. Spitkovsky**. *Flat portions on the boundary of numerical ranges of 4-by-4 nilpotent matrices.*

A 4-by-4 matrix has at most four flat portions on the boundary of its numerical range; three, if it is unitarily irreducible. It is easy to see that a unitarily reducible 4-by-4 nilpotent matrix has either one or no such portions, and it was conjectured by Gau and Wu in 2008 that there are at most two flat portions in the case of 4-by-4 unitarily irreducible nilpotent matrices. In our talk we will discuss the validity of this conjecture, which was proved by Militzer, Patton, Spitkovsky and Tsai [*Operator Theory: Advances and Applications*, **259**, 2017], and will also characterize the 4-by-4 nilpotent matrices the numerical ranges of which have two flat portions on lines which are equidistant from the origin and meet at a given angle. (Received March 07, 2021)