On maps preserving Lie products equal to a rank-one nilpotent.

Linear preserver problems are one of the most active areas of research in matrix theory. Linear maps that preserve zero Lie products have been well-studied. We characterize bijective linear maps on complex $n \times n$ matrices that preserve Lie products equal to a rank-one nilpotent. Surprisingly, these maps have a different description from maps preserving zero Lie products. (Received September 16, 2019)