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**Yuyu Zhu\*** ([zhuyuyu@math.tamu.edu](mailto:zhuyuyu@math.tamu.edu)), Department of Mathematics, Mailstop 3368, Texas A&M University, College Station, 77843. *PSD and SOS Cones for Ternary Sextics.*

In 1960s, Motzkin famously proved that the ternary sextic  $x^2y^4 + x^4y^2 + z^6 - 3x^2y^2z^2$  is nonnegative but not a sum of squares of real polynomials. Inspired by this example, we compute the volume ratios of the cone of sums of squares (SOS) in the cone of nonnegative polynomials (PSD) for some families of ternary sextics. We will also compare the quality of corresponding SOS relaxations with the original global minimization problems. (Received July 12, 2017)