1150-32-280 **John P. D'Angelo*** (jpda@illinois.edu), IL 61801. *Number-theoretic properties of rational CR sphere maps.* Preliminary report.

We consider rational functions mapping the unit sphere in $\mathbb{C}^n$ to the unit sphere in some $\mathbb{C}^N$. When $n = 2$, there exist maps of degree $d = 2r + 1$ whose invariant group is cyclic of order d and which satisfy the sharp degree estimate $d = 2N - 3$. The maps have many remarkable number-theoretic properties. It is natural to ask whether any other maps satisfy this sharp estimate. D'Angelo and Lebl proved that other *sharp* maps exist when the degree is congruent to 3 mod (4) or to 1 mod (6). Such maps do not exist in degree $5, 9, 17, 21$. The precise list of such degrees is an open problem. I will introduce an additional symmetry, namely that $||f(z, w)||^2 = ||f(w, z)||^2$,and discover that sharp symmetric maps exist in degrees $1, 3, 7, 19$ but in no other degrees at most 30. I hope to answer degree 31 in time for this talk and to place this work in a CR context. (Received July 11, 2019)