1158-30-171 **Rikard Bøgvad**, **Innocent Ndikubwayo*** (innocent@math.su.se) and **Boris Shapiro**.
Generalizing Tran's Conjecture.

In 2014, Khang Tran conjectured that, for an arbitrary pair of polynomials $A(z)$ and $B(z)$, if $z_0 \in \mathbb{C} \setminus \{$ zeros of $A(z)\}$ is a zero of some polynomial in the sequence $\{P_n(z)\}_{n=1}^{\infty}$ generated by the three-term recurrence relation of length k

$$P_n(z) + B(z)P_{n-1}(z) + A(z)P_{n-k}(z) = 0$$

with standard initial conditions $P_0(z) = 1$, $P_{-1}(z) = \cdots = P_{-k+1}(z) = 0$, then z_0 lies on the real algebraic curve $\mathcal{C} \subset \mathbb{C}$ given by

$$\Im\left(\frac{B^k(z)}{A(z)}\right) = 0 \quad \text{and} \quad 0 \leq (-1)^k \Re\left(\frac{B^k(z)}{A(z)}\right) \leq \frac{k^k}{(k-1)^{k-1}}.$$

In this talk, I will generalize Tran's Conjecture and prove existence of such a real algebraic curve. This is based on a joint work with R. Bøgvad and B. Shapiro. (Received February 29, 2020)