An algebraic study over Secant Varieties of Rational Normal Curve

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Let $A = k[x_1, \cdots, x_n]$ be a polynomial ring over a field k of characteristic $p > 0$ and set $R = A/I_t(H)$ where H is a Hankel matrix of the size $t \times (n - t + 1)$ in terms of n variables and $I_t(H)$ indicates the ideal generated by all $t \times t$ minors of matrix H. In this setup R is called a **Hankel ring**.

For a Hankel ring, it is an open question whether they are F-rational or **Q**–Gorenstein. We provide affirmative answer to these questions. F-regularity of Hankel rings is investigated. The techniques used here involve considering an anti-canonical cover and passing through a Gorenstein ring.