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Ruskey's Open Problem on Hofstadter's Q Function

Hofstadter's Q function, $Q(n) = Q(n - Q(n - 1)) + Q(n - Q(n - 2))$, is a nested recursion. Ruskey gives solutions to this recursion that have quasi-period 3. Hendel gives solutions that have exact period e for any positive even number $e > 0$. Certain solutions have features not present in traditional recursions. This necessitates developing and standardizing notational, language and proof methods that can describe these features. The presentation will explore examples, theorems, conjectures and proof methods with the following features: i) A solution $\{s_i\}_{i \geq 0}$ has *quasi-period* n meaning that the subsequences $\{s_{kn+i}\}_{k \geq 0}$ with $0 \leq i < n$ are constant, linear, or geometric sequences or linear homogeneous recursions with possibly bounded, (predictable) perturbations.