

1135-11-2337 **Andrew Shallue*** (ashallue@iwu.edu), Illinois Wesleyan University, 1312 Park St,
Bloomington, IL 61701. *New work on the existence of challenge pseudoprimes.*

A PSW challenge pseudoprime is a composite number congruent to 2 or 3 modulo 5 which is a base-2 Fermat pseudoprime and a Fibonacci pseudoprime. Famously, there are no known examples, and no proof that such numbers either exist or do not exist. I will discuss recent progress on this question, including both a positive result and a negative result. The positive result is joint work with Andrew Fiori, where we prove that a similar class of Frobenius pseudoprimes (in the sense of Grantham) exist on average. The negative result is joint work with Jonathan Webster, where we develop a new algorithmic approach to tabulation that pushes out the lower bound on the smallest PSW challenge pseudoprime. (Received September 25, 2017)