

Proof of some Dwork-type supercongruences through a q -microscope

Ni He-Xia

Department of Applied Mathematics, Nanjing Audit University

Abstract

Guo and Zudilin [Adv. Math. 346 (2019), 329–358] developed an analytical method, called ‘creative microscoping’, to prove many supercongruences by establishing their q -analogues. We apply this method to give a q -Dwork-type generalization of Rodriguez-Villegas’ supercongruences, which was recently conjectured by Guo and Zudilin. On the other hand, employing the same method, we confirm some similar supercongruences conjectured by Sun. (Join work with Victor Junwei Guo).

Keywords: q -supercongruences, q -Pochhammer symbol, cyclotomic polynomial.