2024 TALKS IN COMBINATORICS

施亚辉，天津大学教授，研究方向是代数组合学，主要从事整数分拆理论和 q-级数研究。她 2016 年曾在奥地利符号计算研究所访问，目前已在 *Proc LMS*，*J Combin Theory, Ser A*，*Ramanujan J* 等国际著名杂志上发表多篇论文。

Lattice paths and Rogers–Ramanujan–Gordon type partitions

Andrews imposed parity restrictions on the Rogers–Ramanujan–Gordon type partitions, yielding fruitful results. These results were later, advanced by Kursungöz, Kim, and Yee. We introduce a bijection between the lattice paths with three types of unitary steps and the Rogers—Ramanujan–Gordon type partitions. We give some results involving parity considerations on lattice paths by this bijection, as the counterpart of Andrews' results. We also give some new results on lattice paths. By introduce a new type lattice path with four type unitary steps, we establish a connection between Rogers-Ramanujan-Gordon type overpartitions to these lattice paths. By establishing the bijective relationship between overpartitions and lattice paths, we demonstrate that the theorems provided by Chen, Sang, and Shi can be formulated in the form of lattice paths. Subsequently, inspired by Andrews' work on parity in partition identities and its related implications, we impose parity constraints on lattice paths and present some novel discoveries. By leveraging the parity outcomes within lattice paths, we also revisit overpartitions to derive results pertaining to overpartitions with parity considerations.

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