Hook length property of \textit{d}-complete posets via \textit{q}-integrals

Jang Soo Kim
Sungkyunkwan University

Abstract

The hook length formula for \textit{d}-complete posets states that the \textit{P}-partition generating function for them is given by a product in terms of hook lengths. We give a new proof of the hook length formula using \textit{q}-integrals. The proof is done by a case-by-case analysis consisting of two steps. First, we express the \textit{P}-partition generating function for each case as a \textit{q}-integral and then we evaluate the \textit{q}-integrals. Several \textit{q}-integrals are evaluated using partial fraction expansion identities and others are verified by computer.

This is joint work with Meesue Yoo.