Technological University Dublin

ARROW@TU Dublin

Articles   School of Mathematics

h-Vectors of Generalized Associahedra and Noncrossing Partitions

Colum Watt
Technological University Dublin, colum.watt@dit.ie

Thomas Brady
Dublin City University, thomas.brady@dcu.ie

Christos A. Athanasiadis
University of Athens, caath@math.uoa.gr

Jon McCammond
University of California, Santa Barbara, jon.mccammond@math.ucsb.edu

Follow this and additional works at: https://arrow.tudublin.ie/scschmatart

Part of the Mathematics Commons

Recommended Citation

h-VECTORS OF GENERALIZED ASSOCIAHEDRA AND NONCROSSING PARTITIONS

CHRISTOS A. ATHANASIADIS, THOMAS BRADY, JON MCCAMMOND, AND COLUM WATT

ABSTRACT. A uniform proof is given that the entries of the h-vector of the cluster complex $\Delta(\Phi)$, associated by S. Fomin and A. Zelevinsky to a finite root system Φ, count elements of the lattice $\mathbf{L}$ of noncrossing partitions of corresponding type by rank. Similar interpretations for the h-vector of the positive part of $\Delta(\Phi)$ are provided. The proof utilizes the appearance of the complex $\Delta(\Phi)$ in the context of the lattice $\mathbf{L}$ in recent work of two of the authors, as well as an explicit shelling of $\Delta(\Phi)$.

DEPARTMENT OF MATHEMATICS (DIVISION OF ALGEBRA-GEOMETRY), UNIVERSITY OF ATHENS, PANEPISTIMIOUPOLIS, 15784 ATHENS, GREECE
E-mail address: caath@math.uoa.gr

SCHOOL OF MATHEMATICAL SCIENCES, DUBLIN CITY UNIVERSITY, GLASNEVIN, DUBLIN 9, IRELAND
E-mail address: tom.brady@dcu.ie

MATHEMATICS DEPARTMENT, UNIVERSITY OF CALIFORNIA, SANTA BARBARA, SANTA BARBARA, CA 93106, U.S.A
E-mail address: jon.mccammond@math.ucsb.edu

SCHOOL OF MATHEMATICAL SCIENCES, DUBLIN INSTITUTE OF TECHNOLOGY, DUBLIN 8, IRELAND
E-mail address: colum.watt@dit.ie