INCOMPARABILITY AND INTERSECTION PROPERTIES OF BOOLEAN INTERVAL LATTICES AND CHAIN POSETS

Rudolf Ahlswede and Ning Cai

Universität Bielefeld
Fakultät für Mathematik
Postfach 100 131
D – 4800 Bielefeld 1
Germany

Abstract

In a canonical way we establish an AZ–identity (see [9]) and its consequences, the LYM–inequality and the Sperner–property, for the Boolean interval lattice. Further, the Bollobas–inequality for the Boolean interval lattice turns out to be just the LYM–inequality for the Boolean lattice. We also present an Intersection Theorem for this lattice.

Perhaps more surprising is that by our approach the conjecture of Peter Erdös, Seress, Székely [1] and Füredi concerning an Erdös–Ko–Rado–type intersection property for the poset of Boolean chains could also be established. Actually we give two seemingly elegant proofs.