

Discrete Morse theory and the consecutive pattern poset

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(Submitted on 16 Jul 2011 (v1), last revised 6 Aug 2011 (this version, v2))

We use discrete Morse theory to provide another proof of Bernini, Ferrari, and Steingrimsón's formula for the Möbius function of the consecutive pattern poset. In addition, we are able to determine the homotopy type of this poset. Earlier, Björner determined the Möbius function and homotopy type of factor order and the results are remarkably similar to those in the pattern case. In his thesis, Willenbring used discrete Morse theory to give an illuminating proof of Björner's result. Since our proof parallels Willenbring's, we also consider the relationship between the two posets.

Comments: The new version answers a question posed in the original
Subjects: **Combinatorics (math.CO)**; Algebraic Topology (math.AT)
MSC classes: 06A11
Cite as: [arXiv:1107.3262 \[math.CO\]](#)
(or [arXiv:1107.3262v2 \[math.CO\]](#) for this version)

Submission history

From: Bruce E. Sagan [[view email](#)]
[v1] Sat, 16 Jul 2011 22:29:35 GMT (13kb)
[v2] Sat, 6 Aug 2011 18:18:08 GMT (26kb)

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