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The Möbius function of subword order. (English) [Zbl 0706.06007](#)

Invariant theory and tableaux, Proc. Workshop, Minneapolis/MN (USA) 1988, IMA Vol. Math. Appl. 19, 118-124 (1990).

[For the entire collection see [Zbl 0694.00010](#).]

If A^* is the free monoid on an alphabet A , $|A| = n$, with empty word λ , then $\beta < \alpha$ if the word β is obtainable from α by deleting letters, as in $ac < abc$. If $|\beta| = k$ is the length of β and if $\mu(\beta, \alpha)$ is the Möbius function on (A^*, \leq) then it is shown that (Theorem 2):

- (i) $\sum_{\alpha \in A^*} \mu(\beta, \alpha) t^{|\alpha|} = t^k (1-t) / (1 + (n-1)t)^{k+1}$;
- (ii) $\sum_{\alpha, \beta} \mu(\beta, \alpha) t^{|\alpha|} q^{|\beta|} = (1-t) / (1 - (nq - n + 1)t)$.

As a consequence of the proofs and the formulas obtained, the author demonstrates (Theorem 3) that every interval $[\beta, \alpha]$ in A^* is dual CL-shellable, whence much further information concerning various structures associated with the poset may be obtained as a consequence of this fact. Some of these are discussed in ‘remarks’ while others are promised as part of related future publications to follow this elegant paper.

Reviewer: [J.Neggers \(Tuscaloosa\)](#)

MSC:

- [06A11](#) Algebraic aspects of posets
- [68R15](#) Combinatorics on words
- [05A99](#) Enumerative combinatorics

Cited in **4** Reviews
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