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Position-restricted substring searching over small alphabets. (English) Zbl 1375.68230
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Summary: We consider the problem of indexing a given text $T[0 \dots n-1]$ of n characters over an alphabet set Σ of size σ , in order to answer the position-restricted substring searching queries. The query input consists of a pattern P (of length p) and two indices ℓ and r and the output is the set of all $\text{occ}_{\ell,r}$ occurrences of P in $T[\ell \dots r]$. In this paper, we propose an $O(n \log \sigma)$ -word space index with $O(p + \text{occ}_{\ell,r} \log \log n)$ query time. Our solution is interesting when the alphabet size is small. For example, when the alphabet set is of constant size, we achieve significant improvement over the previously best-known linear space index by *Y. Nekrich* and *G. Navarro* [*Lect. Notes Comput. Sci.* 7357, 271–282 (2012; [Zbl 1347.68343](#))] with $O(p + \text{occ}_{\ell,r} \log^\epsilon n)$ query time, where $\epsilon > 0$ is an arbitrarily small positive constant.

MSC:

[68W32](#) Algorithms on strings
[68P20](#) Information storage and retrieval of data

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Keywords:

[string searching](#); [text indexing](#); [orthogonal range reporting](#); [pattern matching](#)

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