理论研究

de Bruijn序列查寻表标签的k位修正构造法

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摘要　　de Bruijn序列的结构是一个查寻表，其核心是它的表标签。因此构造出查寻表标签对于生成de Bruijn序列十分重要。给出两种k位修正构造法。方法1为k位提升构造法，即对大部分节点将其第k（k=1，2，…，n-1）位提升一个定值c（$1 \leqslant c \leqslant m$），来作为该节点的标签。方法2为$k$位收缩构造法，即对大部分节点将其第$k$（$k$=1，2，…，$n$-1）位向定值$r$（$0 \leqslant r \leqslant m$）收缩，来作为该节点的标签。这些方法构造的查寻表标签数随着m，n增长而成指数式增长。与定值构造法一样，在局部看是有效的，但与查寻表标签本身数目的惊人增长比较起来就很渺小。方法2与定值标签构造法比较其速度提高了关于m，n的指数式倍。

关键词　 de Bruijn序列　 查寻表　 查寻表标签　 节点标签表　 节点链

分类号

algorithms for constructing look-up table labels of de Bruijn sequences by modifying k-th character of Node

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Abstract

The structure of de Bruijn sequences is a look-up table whose kernel is its look-up table label.So it is very important for generating de Bruijn sequences to construct their look-up table labels.This paper presents two methods for constructing m+1-ary n stage look-up table labels based on the k-th character of the node.Method 1 is a construct method by stepping up a fixed value c（$1 \leqslant c \leqslant m$）　to the k-th character of the node as its label for most of nodes.Method 2 is a construct method by shrinking the k-th character of node to a fixed value r（$0 \leqslant r \leqslant m$）　as its label for most of nodes.The increasing speed of the amount of Look-up table labels constructed by these methods is exponential by m，n.It is still the same as the method by using fixed value labels.It seems that these methods are efficient，but the speed is not worth to say when comparing with the rapid increasing speed of the amount of look-up table labels themselves.The speed of method 2 raises exponential times on m，n compared with the method by using fixed value labels.

Key words　 de Bruijn sequence　 look-up table　 look-up table label　 node-label table　 node chain

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