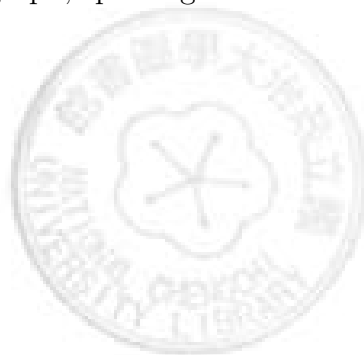


Abstract

In this thesis, we obtain the chromatic polynomial of a mixed hypergraph with complete \mathcal{C} -edges and circular \mathcal{D} -edges by using splitting-contraction algorithm. A mixed hypergraph $\mathcal{H} = (X, \mathcal{C}, \mathcal{D})$ is called circular if there exists a host cycle on the vertex set X such that every C -edge and every D -edge induces a connected subgraph of the host cycle. For each $\ell \geq 2$, we denote \mathcal{D} by \mathcal{D}_ℓ if and only if every ℓ consecutive vertices of X form a D -edge. Thus the mixed hypergraph $(X, \emptyset, \mathcal{D}_2)$ is a simple classical cycle on n vertices.

We observe first a mixed hypergraph with complete \mathcal{C} -edges and \mathcal{D}_2 . By the first step of the splitting-contraction algorithm, we can find out the recurrence relation and solve it. Then we generalize the mixed hypergraph with complete \mathcal{C} -edges and circular \mathcal{D} -edges.

Keywords: mixed hypergraph, splitting-contraction algorithm, circular.



中文摘要

在這篇論文中，我們利用分離 - 收縮法(splitting-contraction algorithm)獲得一個擁有完全 C 邊以及循環 D 邊特性的圖之著色多項式。假如一個混合超圖在點集合上有主要的循環，使得所有的 C 邊和 D 邊包含一個主循環(host cycle)的连接子圖，則稱此圖為循環的(circular)。對於每個 $\ell \geq 2$ ，所有連續 ℓ 個點會形成一個 D 邊時，我們把 D 記作 D_ℓ 。如此一來，超圖 (X, \emptyset, D_2) 就是圖論中 n 個點的普通循環。

我們先觀察擁有完全 C 邊和循環 D 邊的超圖，利用分離 - 收縮法的第一步，找到遞迴關係式並且解它。然後我們就推廣到一般完全 C 邊及循環 D 邊的超圖。

關鍵字：混合超圖，分離 - 收縮法，循環的。

