中文摘要

給定一個圖形G，S為點集合$V(G)$之子集，可視為一傳播集合，以及集合$M_s=\{m(v):v\in S\}$，為一描述S中各點擁有訊息之情形的集合。(S,M_s)-傳播值是指，以S為傳播集，於最短時間內，令全部點獲得所有種類之訊息，可以符號記為$b(G;S;M_s)$。傳遞的方式滿足下列三項限制：

（1） 假設點u在第i個時間前，即擁有訊息j，則u可在第i個時間，將此訊息傳送於點v。

（2） 假設u、v為相鄰兩點，則u可以從v中接收訊息，或者傳送訊息於v。

（3） 在每一個傳播過程，一個點於每單位時間內，只能傳送或接收一個訊息。

給定一個圖形G，其中$S=V(G)$，每個頂點擁有k個訊息，且每個頂點所擁有的訊息均不相同。若$B(G)$是(S,M_S)的傳播集，則我們稱$B(G)$是G 的k-傳播集。在此條件下，我們以$b_k^t(G)$表示為$b(G;S;M_S)$的值；當$k=1$時，為了方便我們用$b^t(G)$來表示 $b_1^t(G)$。我們稱$b_k^t(G)$是G 的k-傳播值，$b^t(G)$稱為G 的全傳播值。

在本論文中，我們給定具漢米爾頓環路或漢米爾頓路徑的圖形的k-傳播值下界，且找到它確定的值，並說明具漢米爾頓環路的k-傳播值及漢米爾頓路徑的圖形的全傳播值。

Generalized Broadcasting Numbers for Graphs with Hamiltonian Cycles or Hamiltonian Paths

Yi-Jiun Yeh

Abstract

Given a graph G and a set $S \subseteq V(G)$ together with a set $M_S = \{m(v) : v \in S\}$, the (S, M_S) *-broadcasting number of* G, denoted $b(G; S; M_S)$, is the minimum number of time needed to complete the broadcasting from S, that is, to let all the vertices in G know all the messages in $\bigcup_{v \in S} m(v)$, subject to the following constraints:

（1）a vertex *u* can send a message *j* to a vertex *v* at time *i* only if *u* owns the message *j* before the time *i*;

（2）a vertex *u* can either receive a message from *v* or send a message to *v* only if *u* is adjacent to *v*;

（3）a vertex can participate in only one call and send or receive only one message per unit time.

Given a graph G, if $S = V(G)$, and $|m(v)| = k$, $m(u) \cap m(v) = \phi$ for all $u,v \in V(G)$, $u \neq v$, $M_S = \{m(v) : v \in V(G)\}$, then we say that *B(G)* is a *total-k call set* of *G* if *B(G)* is a call set of G corresponding to (S, M_S). And we use $b_k^t(G)$ to denote the number $b(G; S; M_S)$ under this condition. When $k = 1$, we use $b^t(G)$ to replace the number $b_1^t(G)$ for short. We call $b_k^t(G)$ the *total-k-broadcasting number* of *G* and call $b^t(G)$ the *total-broadcasting number* of *G*.

In this thesis, we give some lower bound for the total-*k*-broadcasting numbers of graphs and find the total-*k*-broadcasting numbers of Hamiltonian cycles and the total-broadcasting numbers of Hamiltonian paths.