

## MASTER'S THESIS

### Bandwidth of some classes of full directed trees

Tang, Yin Ping Wendy

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**Bandwidth of Some Classes of Full Directed Trees**

**TANG Yin Ping, Wendy**

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## Abstract

A regular  $m$ -ary is a rooted tree, all internal vertices of which are of the same degree. The level number of a vertex  $v$  is its distance from the root. A regular  $m$ -ary tree is full if all the leaves have the same level number. Smithline (1995), and independently Lam (1995), showed that the bandwidth of a full regular  $m$ -ary tree  $T$  is equal to

$$\left\lceil \frac{|T|-1}{L} \right\rceil,$$

where  $L$  is the length of the longest path in  $T$ .

Smithline also conjectured that if the rooted tree is full, then its bandwidth is probably very close to the above formula. In this thesis, we shall give an example of a full rooted tree with a bandwidth larger than the above formula. Also, we shall show that the above formula holds in some classes of full directed trees.

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