

**MONOIDS OF GENERALIZED HYPERSUBSTITUTIONS
OF TYPE $\tau = (n)$**

The seal of Chiang Mai University is a large, faint circular emblem in the background. It features an elephant in the center, with a sunburst or flame-like symbol above its head. The Thai text "มหาวิทยาลัยเชียงใหม่" (Mahavithayalai Chiang Mai) is written in a circle around the elephant. Below the elephant, the English text "CHIANG MAI UNIVERSITY 1964" is visible. There are also decorative floral motifs on the sides.

WATTAPONG PUNINAGOO

**DOCTOR OF PHILOSOPHY
IN MATHEMATICS**

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**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MARCH 2010

**MONOIDS OF GENERALIZED HYPERSUBSTITUTIONS
OF TYPE $\tau = (n)$**

WATTAPONG PUNINAGOO

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN MATHEMATICS**

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**THIS THESIS HAS BEEN APPROVED
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EXAMINING COMMITTEE

..... CHAIRPERSON

Lect. Dr. Bundit Pibaljommee

..... MEMBER

Assoc. Prof. Dr. Sorasak Leeratanavalee

..... MEMBER

Asst. Prof. Dr. Srichan Arworn

..... MEMBER

Assoc. Prof. Jintana Sanwong

..... MEMBER

Asst. Prof. Dr. Thawhat Changphas

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