

**POWER SYSTEM TRANSIENT STATE ESTIMATION
CONSIDERING NONLINEAR CHARACTERISTICS
OF EQUIPMENT**

NARET SUYAROJ

DOCTOR OF PHILOSOPHY

IN ELECTRICAL ENGINEERING

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**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
AUGUST 2015**

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**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
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THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF
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3 August 2015
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To

***My beloved wife, Angkana Suyaroj,
to my mother, Buatong Suyaroj, and my father, Detch Suyaroj.***



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Naret Suyaroj

The seal of Chiang Mai University is a circular emblem. In the center is a stylized elephant facing left, with a flame-like symbol above its head. The elephant is surrounded by a circular border containing the text "CHIANG MAI UNIVERSITY 1964". Above the elephant, there is Thai script. The entire seal is rendered in a light gray, watermark-like style.

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