DRAFT PROPOSAL FOR THEORY COLLABORATORS IN GLUEX

1. General Considerations

- It is desirable to have theorists as full collaboration members. Theorists should sign an MOU with GlueX and be expected to take full part in its operations (e.g. serve on committees and give research presentations.).

- A mechanism should be established for theorists to communicate both among themselves and with the collaboration as a whole (e.g. theory parallel sessions at collaboration meetings, theory review).

- It is important for the GlueX collaboration to support theory collaboration members in procuring funding for GlueX-related research. An official program of theory MOUs will be useful for this. A theory review may also be helpful.

- It is desirable for the collaboration to promote the growth of the hadron theory community.

Sample Memorandum of Understanding between the Thomas Jefferson National Accelerator Facility and the Florida State University

1. Introduction

This Memorandum of Understanding (MOU) outlines the activities that some members of the Nuclear Theory Group in the Department of Physics at the Florida State University will carry out as part of their participation in R&D for GlueX and the contributions of Jefferson Lab to this effort.

The GlueX project is a key component of the future program at Jefferson Laboratory (JLab) which involves an increase of the accelerator energy from 6 to 12 GeV and the construction of experimental facilities to exploit the higher energy beams. GlueX will require the construction of a completely new experimental area dedicated to the search for gluonic excitations of mesons produced in photoproduction reactions. The JLab upgrade is one of four major projects in recently given endorsement by the national Nuclear Science Advisory Committee, and a decision is expected from the Department of Energy in the near future that will initiate major funding for design and construction.

The GlueX collaboration consists of approximately 80 physicists, including both experimentalists and theorists, from 30 institutions in North America and Europe. Members of the Florida State University nuclear theory group will develop a theoretical description of the photoproduction of mesons, including exotic mesons, based on a quark model description of hadron structure and reactions.

2. Personnel

A. The contact person for the Florida State group is Simon Capstick (Associate Professor). Capstick is an expert on baryon resonance structure and reactions and

has been working in support of the Hall B experimental program for over a decade.

B. The following personnel are included in the Florida State nuclear theory group:

Person	Position	% Research Effort
Simon Capstick	Associate Professor	25%
[to be named]*	[post doc]	50%
to be recruited*	Graduate student	100%
to be recruited*	Undergraduate student	100%

* Subject to the availability of funding.

C. [history section deleted as irrelevant]

D. In addition to the personnel in the Nuclear Physics group, the GlueX R&D efforts also receive important support from the Physics Department and the University.

i) Collaborators in this research include Ted Barnes (ORNL/UTK), Steve Godfrey (Carleton U.), Eric Swanson (U. Pitt), Winston Roberts (JLab/ODU), and Adam Szczepaniak (IU).
ii) The scientific computing effort will receive support from FSU via the Department of Physics parallel computer.

3. Responsibilities

A. Members of the Florida State nuclear theory group will:

i) Develop a theoretical formalism for the evaluation of meson photoproduction cross sections, including exotic mesons, based on the quark model formalism of hadron structure and reactions.

ii) This will include calculations of the photoproduction cross sections of the "reference" resonances a_1, a_2, pi_2 and b_1.

iii) Subsequent developments will include calculations of crucial three-meson and meson-baryon strong form factors.

iv) Algebraic software for the analytic evaluation of photoproduction cross sections, amplitudes and form factors will be developed and provided to the collaboration.

B. The GlueX collaboration will

i) Assist in grant applications to the funding agencies for research described in this document.

ii) Provide travel support to attend collaboration meetings.

4. Funding and Schedule

The research described in this MOU will be conducted during the period Jan 2004 to Dec 2008.

Up to $2500 p.a. will be provided for travel expenses for Capstick and/or a graduate student to attend collaboration meetings.

5. Special Considerations

A. JLab will have the final responsibility for the acceptance of all deliverables and retains the right, in conjunction with the Hall D collaboration management to terminate or renegotiate this MOU if the requirements of specification, schedule and costs cannot be met by members of the Florida State Nuclear Theory Group.

B. All items bought or fabricated using JLab funds will remain the property of JLab.

C. The continuation of this agreement is dependent on the approval of funds for all parties.

D. This agreement (MOU) may be amended as necessary.

MOU between JLab and the University of Connecticut

Signature Page

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Prof. Simon Capstick Date
Contact Person
Florida State University Nuclear Theory Group

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Prof. David van Winkle

Date

Department Chair
Florida State University Physics Department

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Dr. Lawrence Cardman

Date

Associate Director of Physics
Jefferson Laboratory.

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Prof. Alex Dzierba

Date

Spokesman
Hall D Collaboration.

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Dr. Elton Smith

Date

Hall D Group Leader
Jefferson Laboratory.

Continued over.

Signature Page (continued).

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Donald Foss

Date

Dean of the College of Arts and Sciences
Florida State University

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Office of Sponsored Research Director

Date

Florida State University