

**Annual Report of Faculty Activities
(July – December 2001)
N. Sanjay Rebello**

Teaching Activities

<i>Courses Taught</i>	<i>Contact Hours</i>	<i>Enrollment</i>	<i>Semester</i>
PHYS 101: Physical World - I	3 Lecture	178	Fall 2001

A Statement of Teaching and supporting documents (syllabus, examples quizzes & exams) are in Appendix A.

Staff and Students Advised*

<i>Name</i>	<i>Position</i>	<i>Graduation Date</i>	<i>Degree</i>
Salomon Itza-Ortiz	Postdoc	N/A	N/A
Chandima Cumaranatunge	Programmer	N/A	N/A
Kara Gray	Undergraduate	May 2004	B.S. Physics

**All of the above are under formal supervision of Dean Zollman. My advisement is in an informal capacity.*

Grants Proposals Submitted

<i>Status</i>	<i>Title</i>	<i>Role</i>	<i>Source</i>	<i>Amount (US\$)</i>	<i>Award Start</i>	<i>Award End</i>
Pending	Physics of the Computer: The Computer as a Context to Learn Physics	PI	NSF	74,657	01/01/02	12/31/02
Pending	How Things Work: Learning Physics Through Real-World Applications	PI	NSF	1,143,682	01/01/02	12/31/05
Pending	AVQM:E2 – Advanced Visual Quantum Mechanics: Electrical Engineering	Co-PI, D. Zollman [PI]	NSF	499,364	01/01/02	12/31/04
Denied	Research in Technology-Based Assessment of Students' Mental Models in Physics: An International and Multicultural Perspective	PI	K-State President's Faculty Dev.	2,600	05/01/02	06/30/02
Pending	CAREER: Research on Students' Mental Models, Learning and Transfer as a Guide to Application-Based Curriculum Development and Instruction in Physics	PI	NSF	436,796	02/01/02	01/31/07
Denied	Teaching Physics and Physical Science Using Toys and Other Everyday Objects	PI	Eisenhower Prof. Dev.	34,437	02/01/02	01/31/03
Pending	Assessing Student Transfer and Retention of Learning in Mathematics, Physics, and Engineering Courses	Co-PI, A. Bennett [PI] (Mathematics)	NSF	500,000	06/01/02	05/31/06

Copies of Summaries, Budgets of the above Grant Proposals are included in Appendix B.

Grants Proposals in Preparation

<i>Status</i>	<i>Title</i>	<i>Role</i>	<i>Source</i>	<i>Amount (US\$)</i>	<i>Award Start</i>	<i>Award End</i>
In Prep. (Due. Jan 24, '02)	Acquisition of a Remote Personal Interaction System for Research on Students' Mental Models and their Development through Instruction	PI	NSF	194,281	07/01/02	06/31/04

A Working Summary of the above Grant Proposal is included in Appendix C.

Departmental and University Committee Assignments

1. Physics Coordinator for the Math-Physics Computer Classroom.
2. Physics Course and Curriculum Committee.
3. AMO Physics Search Committee.
4. University-wide faculty focus group assembled by the Division of Continuing Education to create an online survey system.

Positions in Professional Societies

1. Secretary of the Arkansas-Oklahoma-Kansas (AOK) Section of AAPT.

Current Research Activities

Students' mental models about physical phenomena and the development of these mental models through instruction.

Statement of Current Research Activities is included in Appendix D.

Publications in Refereed Journals *Accepted*

1. "Quantum Mechanics for Everyone: Hands-on Activities Integrated with Technology", Dean A. Zollman and N. Sanjay Rebello, Am. J Phys.
2. "The effect of distracters on student performance on the Force Concept Inventory," Jour. Phys. Ed. Res., supplement to Am. J. Phys.

Copies of the manuscripts of each of the publications above are included in Appendix E.

Publications in Refereed Journals *in Preparation*

1. "Adaptation and Implementation of Research Based Pedagogy in Introductory Physics," N. Sanjay Rebello, Jour. of SMET Education: Innovation & Research, anticipated submission in March 2002.
2. "Model Analysis: What does it tell us?" N. Sanjay Rebello, et. al, Note in Jour. Phys. Ed. Res., supplement to Am. J. Phys, anticipated submission in April 2002.

Extended Working Abstracts of each of the above are included in Appendix F.

Oral Presentations at Conferences

1. "Adapting Research-Based Pedagogy in an Algebra-Trigonometry Physics Course," *Invited Talk*, AAPT Summer Meeting, Rochester, NY (August, 2001).
2. "Investigations of Students' Mental Models and their Applications in Newton's II Law," *Contributed Talk*, AOK Section Meeting of the AAPT, Fayetteville, AR (October, 2001).
3. "The Use of Everyday Language on Learning Physics Concepts," *Contributed Talk*, (with S. Itza-Ortiz and D. Zollman) AOK Section Meeting of the AAPT, Fayetteville, AR (October, 2001).

Copies of the abstracts and thumbnail slides of the above are included in Appendix G.

Workshops Presented at Conferences

1. "Visual Quantum Mechanics Workshop," (with S. Itza-Ortiz) Arkansas-Oklahoma-Kansas Section Meeting of the AAPT, Fayetteville, AR (October, 2001).

A copy of the abstract is included in Appendix H.