Department Overview

Stefan Zollner, Department Head

- Mission and Goals of the Department
- Curriculum
- Faculty & Staff
- Students
- Research, Research Expenditures
- Scholarships and Foundation accounts
- Departmental Budget
- Opportunities and threats

Mission and Goals

- Undergraduate program:
  - Provide students with qualitative and quantitative reasoning skills that broadly prepare students careers in science and other fields.
- Graduate program:
  - Provide students with qualitative and quantitative reasoning skills that broadly prepare students for research and teaching careers in the physical sciences.
- **Goals:**
  - **Retention:** *(hard to measure, but many initiatives and actions)*
    - Fall & spring picnic, learning assistants, tutoring, supplemental instruction
    - UG research & internships & travel, scholarships, student clubs (pizza).
    - **Need to focus on recruiting and supporting graduate assistants (RAs)**
  - **Programs: 75% of graduates employed in STEM fields (surveys)**
  - Research: 75% of T/TT faculty have external research grants; 67% of T/TT faculty have at least two peer-reviewed articles; 75% of T/TT faculty have at least one conference presentation.

Comprehensive Land-Grant Curriculum

- Bachelor of Science in Physics, College of Arts and Sciences
  - Two semesters of chemistry, one year of foreign language, programming, advanced lab, physics electives; comparable with peers (Mech, 2 E&M, 2 QM, thermo).
- Bachelor of Arts in Physics, College or Arts and Sciences
  - Fewer physics courses, one year of foreign language.
  - Requires minor in another field (such as astronomy)
- **Bachelor of Science in Engineering Physics**, College of Engineering
  - That's why we are meeting today!
- Minor in Physics: 18 credits, at least 9 upper-division
- Master of Science in Physics (thesis and non-thesis option)
- **Master of Engineering in Engineering Physics (new)**
- Master of Science in Physics with Concentration in Space Physics
  - New option, two graduates so far (not sustainable)
  - Physics core, space weather, nuclear physics lab, space physics electives.
- Ph.D. in Physics

Faculty: In renewal

- 13 Tenure/tenure-track faculty
  - Professors: Burkardt, Kiefer, Nakotte, Pate, Vasiliev, Zollner
  - Associate Professors: Engelhardt, Hearn, Papavassiliou, Urquidi
  - Assistant Professors: **Cooper** (2015), **Fohtung** (2013), **Wang** (2012)
- Three bridged faculty hires with LANL, FNAL, and RBRC. **Two new hires** in geophysics and nuclear theory approved.
- College Faculty (permanent lecturers)
  Michaela Burkardt, Michael DeAntonio (both half-time)
- Use Ph.D. candidates as temporary instructors
- 13 Emeriti (some active) and 3 affiliated faculty

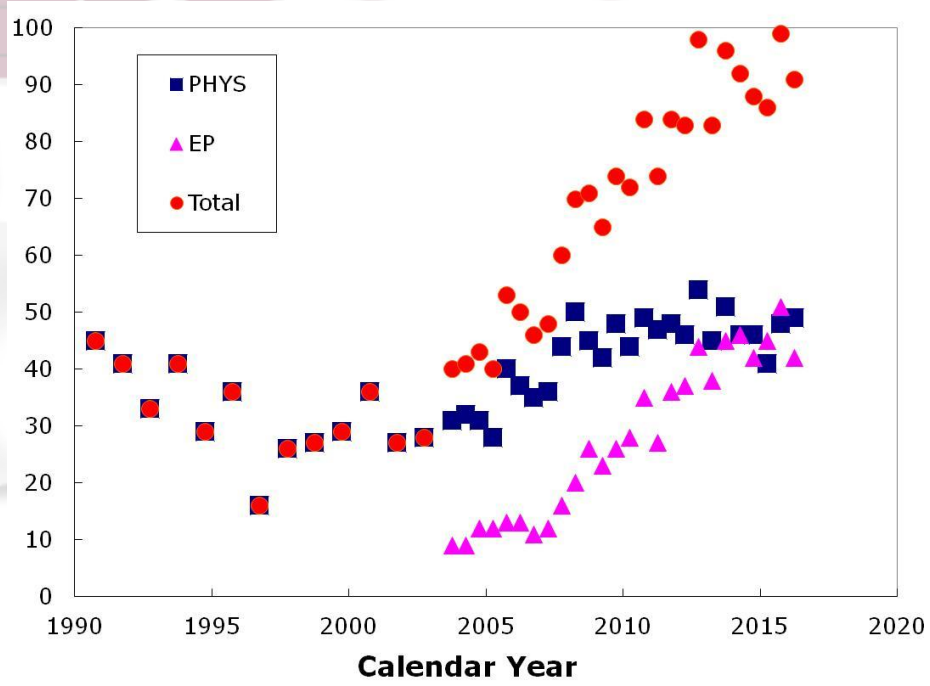
Staff

- Office Staff
  - **Administrative Assistant: currently frozen (perhaps search in fall)**
  - Fiscal Assistant: Rosa Christensen
- Teaching Staff
  - **Lab coordinator position open** (Galen Helms interim, **search in summer/fall**)
  - Two lab coordinator assistants (undergraduates)
  - Seven learning assistants for SI and for tutoring (Provost support)
- Research Staff
  - Research Professor Charles Bruce (atmospheric physics)
  - Postdoc Haiwang Yu (Brookhaven, nuclear physics)
  - Postdoc Tia Miceli (Fermilab, neutrino physics)
  - Postdoc Roman Hoellwieser (Nuclear theory, Schroedinger fellow, Austria)
  - Two exempt research staff (Michael Granado, Elena Fernandez)
  - IT specialist (Ayat Ghazisaeed, graduate assistant)

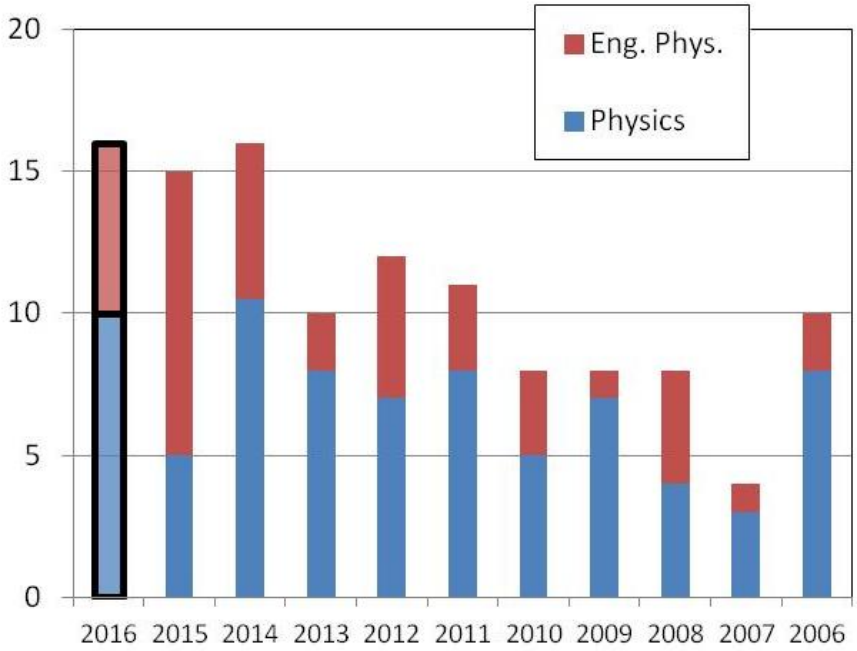
Students

- Record graduation rate for 2016 (15 students, spring only)

Undergraduate enrollment: <100



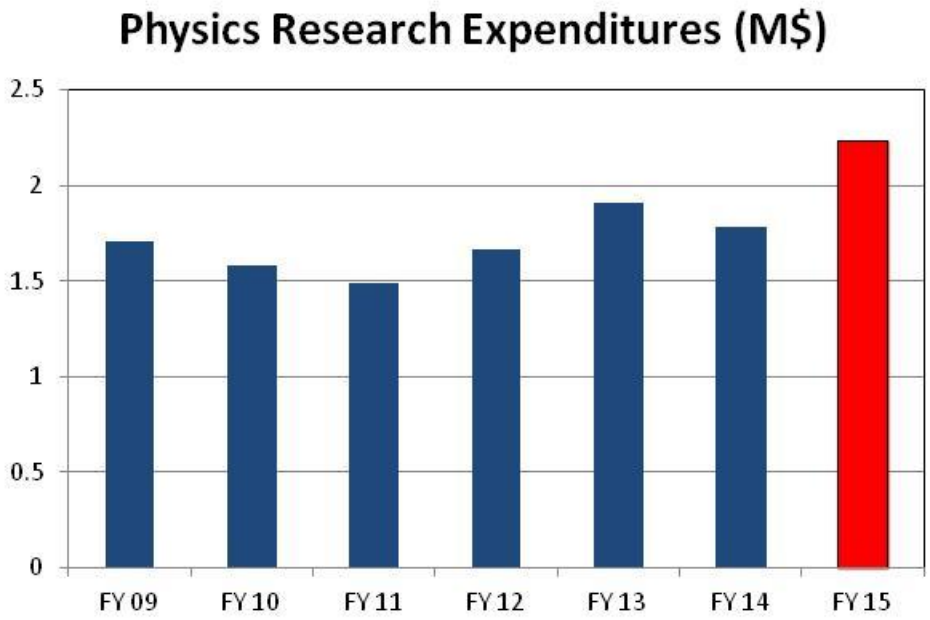
Undergraduate degrees (BS, BA): ≈15



Research

- 13 Tenured and tenure-track faculty
- 3 bridged faculty positions with LANL, FNAL, and RBRC (Brookhaven)
  - Negative impact of LANSCE shutdown, two faculty members in transition
- Invitation from DOE for bridged faculty position in nuclear theory.
- **4.5 Graduate RAs in F16 (down from 19)**, some UG RAs.
- Extensive research efforts in
  - Nuclear Physics (Pate, Burkardt, Papavassiliou, Engelhardt, Wang)
  - Condensed Matter Physics (Nakotte, Zollner, Kiefer, Vasiliev, Urquidi, Fohtung)
  - Geophysics (Ni, Hearn); Particle physics (Cooper)
- Expanded our DOE-funded efforts in nuclear and particle physics

External Research Expenditures



Graduate Assistantships (Fall 2016)

3 in nuclear physics (experiment)
0.5 in materials physics (theory)
1 in materials physics (experiment)
Total: 4.5 Research Assistants

- **Research expenditures are up, but research assistantship lines are down.**
- Lost one teaching assistantship line due to budget cuts, more possible.
- Declining graduate enrollments (**28 in fall 2016, down from 40 in 2010**).
- NMSU graduate enrollment down by 20% since 2010.

Budget (FY 2015/16)

- Faculty salaries: 1,067 k$ (64 k$ open)
- Staff/DH salaries: 252 k$ **(86 k$ open)**
- Teaching assistants (17.5): 339 k$
- Departmental Funds (A&S): 65 k$
- Equipment requests (A&S): 7 k$ (down to reduce deficit)
- **College of Engineering student fee: 15 k$ (request for FY 17)**
- Supplemental Instruction (Provost): 36 k$ per year
- SURF (research incentive return): 10 to 50 k$ per year (varies)
- Foundation: 60 k$ (earnings per year)
  - Gardiner Professorship 15 k$, Burris account 15 k$, scholarships 33 k$
  - **New Engineering Physics Scholarship (USD 1400 in FY16).**
  - Total endowment: 1.66 M$
- Scholarships for EP students from Engineering: ?? k$ (awarded independently)

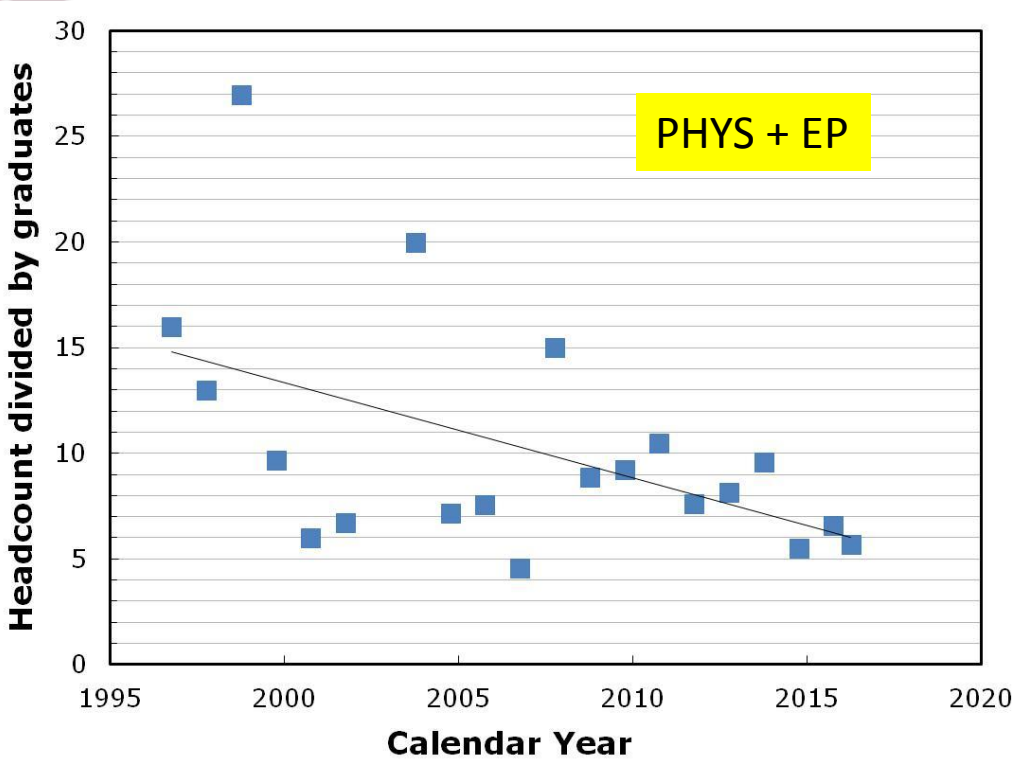
Scholarships

- Foundation earnings (13/14):20 k$
- Foundation earnings (15/16):31 k$
- Several new donations received in the current year.
- Large recent donations (>100 k$) from a physics alumnus in Virginia.
- **This year, 33 k$ are distributed among 27 recipients (12 EP, 15 physics).**
- **Awards range from USD 500 to 2000.**
- **New Engineering Physics Current Use Fund (since fall 2015).**
- Only criterion for scholarships is physics GPA, overall GPA, with a minimum number of physics credits required.
- Some scholarships have preferences (NM resident, female, Hispanic, financial need, experimental aptitude, etc).
- Engineering College also makes awards to EP students (separately).

Threats and Opportunities

- Threats:
  - 120 credits (competition with UNM, NMT, UTEP, TTU)
  - First-year engineering curriculum for all engineering students
  - Small department, all parts (UG PHYS, EP, GRAD) crucial
  - Unstable equilibrium
  - Minimum course enrollments (10 UG, 5 GRAD)
  - I&G budget reduction by 10.7 M$ in FY 17 (down by 7% of 180 M$)
- Opportunities:
  - Rare EP program in this area
  - 120 credits
  - GenEd reform and Viewing a Wider World (VWW) courses
  - Focus mission of the institution, eliminate non-critical programs
  - Lower tuition than similar schools in the West (WICHE-WUE)

Retention of Students is Improving



Headcount divided by # of graduates should equal 4 (if all students graduate in 4 years)
Currently at 5-6, decreasing trend.