Government Lab Career Options

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Thanks to my old friend Gordon Emslie at OSU for some of these slides.
Outline

Career Path Options

• Company
• University
• Government
Graduate Student
Graduate Student

Postdoc

Faculty Member

Government Laboratory

Company
“Post-Doc”

• Also known as
  – Research associate
  – NRC Fellow (DOD, DOE, NIST, …)
  – ORAU Fellow (NASA)
  – Postdoctoral Fellow

• Midway between being a student and working with students

• Not common in other fields (engineering, humanities), but

• Golden opportunity at National Labs to identify yourself
Career Contrast
Company/University/Government
Company

- Can hire “spontaneously” in response to applicant availability
- Generally pays quite well!

**BUT**

- *No tenure!*
- Often doing “other people’s work”
- Job generally split between centrally and externally funded tasks
University

• Typically hire in response to department/university needs
  – Teaching
  – Growth
  – Research initiatives

• Opportunities not necessarily well-timed to your availability
Government Laboratory

- NASA (JPL, ARC, GSFC, MSFC, ....)
- DoD (ARL, RDEC, NRL, ....)
- DOE (LANL, LBNL, LLNL, ....)
- Typically more “project-driven” than university
- Can be more “academic” freedom than industry
Government Laboratory

Three Typical Ways In:
- Postdoc (Easiest)
- Contractor (Medium)
- Direct Hire (Hard)

It is difficult to FIRE a gov’t lab employee so they are hesitant to hire. Job opportunities are targeted to contractors or postdocs inside the loop.
Two Types of Gov’t Labs

• REAL Gov’t Lab
  – ARL, MSFC, ARC, …
  – Mostly US Federal Employees
  – Some Contractors

• FFRDC (Federally Funded Research & Development Center)
  – JPL, LANL, Sandia, MITRE, AreoSpace...
  – Everybody is a Contractor (Caltech, UC, Lockheed, …)
  – Some Contractors are More Equal Than Others
Real Government Laboratory (GS)

- Hiring by announcement
- Little or No salary negotiation!
- 1-2 year “probation period” – and then “tenure”!
- May have to perform other tasks related to lab operations:
  - Proposal administration
  - Mission management
- New – Full-Cost Accounting! = No Free Rides!
- Old — Very Hard to Lay Off a “REAL” Gov’t Employee! Job security: High! Salary: Low! (See University Professor….)

FFRDC

• Hiring by announcement
• Salary negotiation!
  – Everyone at NASA JPL is a Caltech Employee
  – Caltech sets salary in negotiation with NASA — Not US Gov’t Salary!
• 0.5-1 year “probation period” – almost instant tenure!
• Almost instant layoffs if funding collapses. Must be FLEXIBLE.
  – JPL Layed Off 10% of its “permanent” staff in 2005.
  – This would have been impossible at NASA Ames (Retirement/Buyouts)
  – People who stay learn to be jacks of all trades
• May have to perform other tasks related to lab operations:
  – Proposal administration
  – Mission management
• Old – Full-Cost Accounting! = No Free Rides!
  – You must write grant proposals for internal and external funding.
  – You cover your salary from these grants.
  – Mission Funding Seems Safest but Can Cancel the Mission!
  – Basic Research Requires Flexibility and Lying.
  – Very EASY to Lay Off an FFRDC Worker!
  – SALARY CAN BE VERY HIGH!
Δ$ \times \Delta JS = 1

High Salary Implies Low Job Security

High Job Security Implies Low Salary

My strategy:

1. Luck
2. Take HIGH RISK and HIGH SALARY when YOUNG.
3. Negotiate JOB SECURITY when OLDER
4. Keep High Salary Too!
How to Get In the Gov’t Door?

• Attend US Gov’t Sponsored Workshops
• Schmooze & Booze!
• Look at Lab Web Pages
• Look at ORAU Website for NASA
• Look at NRC Website for All others

Found NRC Army Postdoc Job on “Web Site”
Used NRC Postdoc to Leverage Army Research Physicist Job
Wowed JPL guys at NASA Conference and got NASA JPL Offer.
NRC Opportunities
http://nrc58.nas.edu/RAPLab10/Opportunity/Search.aspx

Use this to match research area with a NAME, phone number, and Email address at each lab. Then contact them directly! May not have An NRC position but know of others routes in.
Location

Naval Research Laboratory, Space Science

RO# Location
64.15.89.B3042 Washington, DC 203755321

Please note: This Agency only participates in the February, May, and August reviews.

Advisers

Name E-mail Phone
Dermer, Charles Dennison charles.dermer@nrl.navy.mil 202.767.2965

Description

This program involves the theoretical analysis and interpretation of hard x-ray, gamma-ray, cosmic-ray, and neutrino data. We use spectral models of high-energy radiation from compact objects (e.g., galactic and supermassive black holes, gamma-ray bursts, and isolated and accreting neutron stars) to interpret observations made with past and currently operating x-ray and gamma-ray telescopes. In addition, we study electron-positron pair production and annihilation processes to interpret the annihilation emission in the Galaxy. Production of high-energy gamma rays in gamma-ray bursts and blazars, multiwavelength radiation from supernovae and cosmic ray interactions in the Galaxy, acceleration and gamma-ray radiation processes in Solar flares, and other problems relevant to the Fermi Gamma Ray Space Telescope are studied. This research includes improved calculations of cross sections and processes for use in analyses of ongoing and future experiments, such as Fermi, gamma-ray Cerenkov telescopes, an advanced Compton telescope, and high-energy neutrino and cosmic-ray experiments, and in studies of acceleration, interaction, and transport of solar energetic particles and cosmic rays.

Keywords:
Black holes (astronomy); Gamma-ray astronomy; Gamma-ray bursts; Neutron stars; Supernovae;
NRC Continued

- Once you match a name to a research area, contact this person.
- They have other options besides the NRC.
- Example JPL Postdoc, Caltech Postdoc, Contractor, Even Full Hire (if Desperate)
- Can also go to Lab Jobs Web Site but likely filtered by incompetent HR office.
Typical JPL Job Announcement through HR Office

7261 - Scientist - Outer Solar System Science

Apply Now
Overview
Date Posted: 2/28/08
Job Code: X502
Category: Government
Job Family: Science
Requisition Number: 7261
Will Statement

Will: Be a research scientist to conduct independent and collaborative research in Outer Solar System science, more specifically in planetary surface geology and geophysics. Assist research activities related to Cassini RADAR data and in particular, studies of Saturn's moon, Titan. Will become an integral part of the Geophysics & Planetary Geosciences group in the JPL Science Division and will help to generate R&A proposals, collect data and generate peer-reviewed scientific publication. Will report to Geophysics & Planetary Geosciences group supervisor.

Skills

Required Skills: Ph.D. degree in Planetary Science, Geology, Environmental Science, Physical Science or related field with 3+ years of experience or an MS degree with 8+ years experience. Demonstrated research experience in a broad range of scientific areas including geological fluid dynamics and analysis of extra terrestrial remote sensing data. Experience in interpretation of Synthetic Aperture Radar (SAR) data. Ability to perform independent and collaborative research in planetary science and geophysics. Excellent written and verbal communication skills.

Desired Skills: Experience in laboratory experimentation and the interpretation, processing and analysis of spacecraft data. Good laboratory and computer skills with respect to data acquisition and analysis. Ability to develop research proposals for external funding.

No contact information!
That’s what Google is for!
### Advanced Computational Tools and Data-Analysis Techniques for LISA Science

<table>
<thead>
<tr>
<th>RO Number</th>
<th>18332</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Jet Propulsion Laboratory (JPL) Pasadena, CA 91109</td>
</tr>
<tr>
<td>Advisor Information</td>
<td>Vallisneri, Michele : 818 393-7634 : <a href="mailto:Michele.Vallisneri@jpl.nasa.gov">Michele.Vallisneri@jpl.nasa.gov</a></td>
</tr>
<tr>
<td>Citizenship Requirement</td>
<td>U.S. Citizens Accepted; Lawful Permanent Residents Accepted; Foreign Nationals Accepted</td>
</tr>
<tr>
<td>Keyword(s)</td>
<td>Black holes; Data analysis; Gravitational waves; LISA</td>
</tr>
<tr>
<td>Description</td>
<td>Gravitational-wave observations will create matchless opportunities to investigate the dark side of the universe, providing direct information about the properties of black holes and neutron stars, and allowing precise tests of general relativity's yet unproven predictions. NASA's Laser Interferometer Space Antenna (LISA) will extend the observational window of ground-based detectors to lower frequencies, and to a considerably richer population of sources, including most of the compact binary systems in our Galaxy and the gravitational captures of compact objects into the supermassive black holes at the center of distant galaxies. NASA Postdoctoral Fellows would participate in research at the strategic forefront of gravitational-wave data analysis, building next-generation computational tools to model the response and noise budgets of complex detectors [such as the software package Synthetic LISA, Phys. Rev. D 71, 022001 (2005)], to extract physical insight from measured waveforms [such as the &quot;template families&quot; for black-hole binaries described in Phys. Rev D 69, 104017 (2004)], and to manage the incremental, probabilistic knowledge base that underlies future design efforts.</td>
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The First Interview

*They* are in charge!

- Seminar – substance, relation to mission of group
- Your long-range research plans
- Conversations with future colleagues
- Interviews with administrators
- The Branch Heads
Finalizing the Hire

You are in charge!!

• Salary
• Research Support Startup Package
• Understand the periodic review process

The first person to mention an actual dollar amount number in a salary negotiation loses.

For a permanent position: turn down the first offer. They will always have a second one ready to fly. If you accept the first offer you come off as naive.
Government Laboratory (Sub-Contractor)

- Most hires are in this category
  - Company
  - University affiliate
- Hired by/working for company/university
- Perform tasks related to mission objectives:
  - Hardware development
  - Software development
  - Subcontract work
- Tasks originate/assigned by Government civil servant or by super contractor. JPL contractors farmed out work to subcontractors.

JPL Had about 5,000 employees and 1,000 subcontractors. Subcontractors can often become employees or vice versa.
Government Laboratory Administration: What You Must Do To Keep Getting Promoted

• Group Supervisor
• Section Manager
• Division Manager
• Laboratory Chief (SES)
• Science Director
• Set goals and direction for laboratory
• Still solving other people’s problems

JOB SECURITY COMES AT A PRICE!
Section Managers and Above at JPL Almost NEVER Layed Off!
No Grant Writing. No Research! Paper pushers…
Other Roles in the Community

• Government Agency Program Manager
  – permanent
  – “rotator” DOD->NSF->NSA->DOD

• Laboratory Director

• Education & Outreach
Role of Research

- Varies by career type
- In some fields, not always gauged by funding rate, but…
- In Physics, it is!
  - University
    - Summer salary
    - Tenure (and post-tenure support for others)
  - Government – job assignment
  - Company – job security
Funding Research

• With full-cost accounting, now necessary in virtually all career options
• Required $$ Overhead HUGE at Gov’t Labs
  ~2–3 × gross salary
  ~1.5 × other
  • Travel
  • Publication
  • Equipment
  • Subcontracts
  • Supplies, materials
• Requires steady output of grant-writing activity!
• At JPL and Army there were internal grants (easy) and external grants (hard).
• If you don’t have coverage you take unpaid leave at JPL. Army would ding you on performance reviews.
JPD – a timeline/case study
Graduate Student

Postdoc

Faculty Member

Government Laboratory

Company

Administration

Retire

Play Irish Harp

1988 U. Colorado
Graduate Student

Postdoc

Faculty Member

Government Laboratory

Company

Administration

Retire

Play Irish Harp

1989–1990 Max Planck
1991–1994 NRC Army
Go Directly to Big-Shot Professor and By-Pass Tenure Track BS

1. Graduate Student
2. Postdoc
3. Big-Shot Professor
4. Government Laboratory
5. Company
6. Administration
7. Retire
8. Play Irish Harp

2004 LSU
Points to Remember

• TANSTAAFL!
  – There Ain’t No Such Thing as a Free Lunch!
  – There Ain’t No Such Thing as a Free Launch! (NASA)

However,…. 

• Take More Risks When Younger = $$$
• Focus on Job Security When Older = ZZZ
• Non-Location, Non-Location, Non-Location!
  – Boulder / Munich / Huntsville / Pasadena / Baton Rouge
  – Must weight the PERSONAL vs. the CAREER!
  – The best way to get a promotion is to move or threaten