Fyi

----- Original Message -----
From:
To: Jes Staley; Mom
Sent: Thu Dec 02 22:48:24 2010
Subject: Fw:

I like his research!!
-----Original Message-----
From: Andrew MacFadyen
Sender:
Date: Thu, 2 Dec 2010 22:37:03
To: Alexa N. Staley<
Subject: Re:

Dear Alexa,

Thanks for writing. Your message is timely. I and my group at NYU are
working on several projects in computational astrophysics,
particularly focusing on relativistic gas dynamics and very recently
including coupling to dynamical space times. We are very much
starting to move into numerical relativity with an eye toward accurate
inclusion of gas dynamics relevant for neutron star-black hole and
neutron star-neutron star binaries. We are motivated by advanced LIGO
which I'm sure you are aware is scheduled to be on line starting in
2014 and is expected to detect double neutron star mergers to several
100 Mpc distances at which the event rate should be sufficient to
yield detections.

A graduate student in my group has recently written an Einstein/hydro
code in 1D to simulate black hole formation during collapse of massive
stars. Our goal is to extend this code to 3D using efficient adaptive
mesh refinement on massively parallel computers to simulate black hole
mergers at very high resolution.

I am on sabbatical at Harvard this coming semester. But I will stay
in touch with the application process. Good luck with your
application.

Best Wishes,

Andrew

On Thu, Dec 2, 2010 at 10:12 PM, Alexa N. Staley <   > wrote:
> Dear Professor MacFayden,
>
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>
> My name is Alexa Staley and I am a senior at Bowoin College in Brunswick,
> Maine. I am a physics major and math minor in pursuit of a PhD. in physics.
> I am very interested in the physics graduate program at NYU, and will be
> submitting my application shortly.
>
> During my time at Bowdoin I have focused on general relativity, and this

> past summer I conducted research in the field of numerical relativity. More
> specifically, I created a code in Fortran 90 that simulates the collapse of
> a spherically symmetric dust cloud of uniform density and zero pressure into
> a Schwarzschild black hole. As you might know, Oppenheimer and Snyder have
> an analytical solution to this collapse; my project entails verifying this
> collapse in another coordinate system called the "moving puncture"
> coordinate, which is now widely used in numerical relativity. I will
> continue this research throughout the academic year and my work will
> culminate with a thesis paper that I will present to the Physics Department
> in the spring.
>
> I understand that your research is in computational astrophysics, which is a
> field that I am interested in. At your convenience, I would love to hear
> more about your research.
>
>
>
> Thanks,
>
> Alexa

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Andrew MacFadyen   ████████████████
New York University   http://cosmo.nyu.edu/aim