Subject: Fwd: Dave Arnold availability
Date: Monday, March 21, 2016 at 12:52:42 PM Eastern Daylight Time
From: Erricos C. Pavlis
To: David Arnold
CC: Mike Pearlman
Priority: High

Dave,

I am forwarding you the two emails where I discussed with Michael what the LARES-2 questions are. These should give you an idea of what we are looking for. After residing these, we can talk on the phone whenever you are available. Just let me know when and what number to call!

Thanks!

ecp

Begin forwarded message:

> From: "Erricos C. Pavlis" <epavlis@umbc.edu>
> Subject: Re: Dave Arnold availability
> Date: March 19, 2016 3:50:57 PM EDT
> To: "Michael R. (Mike) Pearlman" <mpearlman@cfa.harvard.edu>
> Michael,
> That will help, we do not have anything we can afford at the moment. I do not want him to spend excessive amounts of time or effort. We need to get a rough estimate starting from the current design LARES cross section and the corresponding signal strength to what we need to modify the design for a similar return from a 6000 km orbit (LAGEOS altitude). We can sort of interpolate any in-between scenarios or we can ask him for a simple 2-3 point diagram that would give us an idea of intermediate orbits (since we deal with R**4 and not a linear propagation).
> As I said, we want to make the size a bit larger, almost as large as LAGEOS, but to keep the limit of 320 kg on the mass we can launch, we need to find tungsten alloys that are lighter than the one we used on LARES-1, so that the gain size does not meant that we gain in mass as the radius to the third power which would put us out of the limits pretty quickly. As we make it larger we will need to increase the number of CCRs, so there is another trade-off, we do not want to make the return like the ones from LAGEOS (6-7 CCRs) that would create a pretty distorted return pulse, but we still need to get a strong enough return that most stations will track it. I suppose we have to play with the density and size of the CCRs to solve this puzzle.
> I have no clue how much time he needs to work on these, but maybe he can give you an estimate and you can decide if it is doable within budget or if we need to get help. The problem is that we need to have some rough numbers two weeks from now, since that is she we talk with ASI and we will have to know roughly what we need them to fund. If successful, there will be more funding for him down the road, as it happened with LARES-1, so he can look at this as "writing a proposal" for future funding ;-)
> Thanks for helping out, in the end ILRS will win something again!
> ecp
>
> > On Mar 19, 2016, at 10:35 AM, Erricos C. Pavlis <epavlis@umbc.edu> wrote:
> > Michael,
> > We have been talking with Stephen, NRL and with the Italians on a possible launch of a LARES-2 in the next few years. We have gotten a (VERY) firm commitment from the VEGA launcher offering a free ride with their extended versions inaugural launch in 2019, which will allow us to reach even LAGEOS-altitude orbits.
> > We are now working on ASI to get as much funding as we can to build the satellite and for that I would like to know some parameters that we would have to change on the LARES design to keep the signal at the reasonable

levels for the majority of the ILRS stations. Does he have time/funding to work out some ballpark numbers for us? We want to increase the size of the sphere while we keep the area-to-mass below LAGEOS ratio and at the same time not exceed the max mass we can put on VEGA (~320 kg).
Do you think I can bug him with such work? Please do not discuss this widely, we may have to write a proposal on this for local funding.
ecp

++
Dr. Erricos C. Pavlis Phone:+1 (410) 455-5832
Research Scientist FAX: +1 (410) 455-5868
US Mobile: +1-240-381-9879
EU Mobile: +30-694-241-5079
Chair, ILRS Analysis Standing Committee
Joint Center for Earth Systems Technology, (JCET/UMBC)
University of Maryland, Baltimore County & NASA Goddard
TRC #182
1000 Hilltop Circle
Baltimore, Maryland
U S A 21250 epavlis@umbc.edu
++

++
Dr. Erricos C. Pavlis Phone:+1 (410) 455-5832
Research Scientist FAX: +1 (410) 455-5868
US Mobile: +1-240-381-9879
EU Mobile: +30-694-241-5079
Chair, ILRS Analysis Standing Committee
Joint Center for Earth Systems Technology, (JCET/UMBC)
University of Maryland, Baltimore County & NASA Goddard
TRC #182
1000 Hilltop Circle
Baltimore, Maryland
U S A 21250 epavlis@umbc.edu
++

++
Dr. Erricos C. Pavlis Phone:+1 (410) 455-5832
Research Scientist FAX: +1 (410) 455-5868
US Mobile: +1-240-381-9879
EU Mobile: +30-694-241-5079

Chair, ILRS Analysis Standing Committee

Joint Center for Earth Systems Technology, (JCET/UMBC)
University of Maryland, Baltimore County & NASA Goddard
TRC #182
1000 Hilltop Circle
Baltimore, Maryland
U S A 21250 epavlis@umbc.edu

++