Hi Bethany,  
  
2-4pm Thursday sounds good to me; I should be available in my office (West   
221) during that time, if I'm not already meeting with you in the Bridge   
Study Room.  
  
The basic aim for your sub-group is to generate realistic predictions of   
what the observing sub-group aims to study and might expect to detect, in   
terms of numbers of galaxies per unit area, luminosity & redshift (z). A   
complex simulation is not needed, or even feasible in the circumstances,   
but you can get good results based on a relatively straightforward model:  
  
The best place to start is to get the current best estimate of the   
luminosity function at z~10 (i.e. around the epoch of reionization), which   
gives you the expected volume number density of galaxies as a function of   
luminosity (L). You can then integrate this L function over redshift   
slices covering the epoch of reion. to give a total no. of galaxies per   
area, L and z. The output of this model will allow the observing group to   
know, for a given survey area & exposure time, how many galaxies to expect   
as a function of apparent magnitude.  
  
Further key developments of this model are to allow for evolution in the L   
function and to allow for the effects of galaxy clustering/cosmic   
variance, which is crucial when dealing with narrow area (but deep)   
surveys. You also need to consider how the predictions will change with   
different photometric band.  
  
Answers to your specific questions are below.  
  
On Fri, 18 Jan 2013, Bethany Johnson wrote:  
  
> Hello, thank you for letting us know, we have a few questions for you   
> which would really help us progress this weekend and also a few   
> suggestions for other times we could meet.  
>  
> We would prefer to meet at 2-4pm on a Thursday as this is already one of   
> the allocated slots. Or Wednesday after 12pm or Tuesday 4-6pm. We will   
> opt for whichever is best for you.  
>  
> We also have a few questions for you which we were intending to ask   
> today but since we haven't been able to meet you in person it would be   
> useful if you could get some answers back to us before the next session   
> on Tuesday so that we can progress with the project.

**> 1. What should we be concentrating on as the main outcomes of the   
> computer program?**  
>     Luminosity? Redshift? Star formation rate?  
>  
see above  
  
**> 2. From your experiences is there a timescale in which we should be   
> aiming to have the program completed?**  
>  
It depends how far you get with developing the basic model. Since that's   
the main purpose of your sub-group, it'll probably take most of the term,   
but obviously you need to allow enough time for the observing group to use   
your results.  
  
**> 3. At that point what information will we be required to give to the   
> observing group?**  
>  
see above, but mainly it'll depend on what the observing group wants!  
  
**> 4. What will be our next step (as the theory team) after the program has   
> been completed and the information has been given to the observational   
> team?**  
>  
developing the model/program further and, ultimately, writing the report.  
  
**> 5. Do you have any example simulations you can give us or know of any   
> particularly useful resources?**  
>  
Start with the references provided and check for papers which have cited   
those papers and/or search for papers measuring or dealing with the   
galaxy luminosity function in/around the epoch of reion.  
  
**> 6. What initial parameters should we be using? Are these things we   
> should choose based on our research (i.e. just use the most commonly   
> used) or are there specific values for these cosmic parameters which   
> apply specifically to this project?**  
>  
For cosmological parameters, a common choice is H0=70, Omega\_m=0.3,   
Omega\_lambda=0.7, but you can also use the latest WMAP (year 7 or maybe   
even year 9) results for these parameters, or whatever seems appropriate   
based on current papers in this subject area. You could also investigate   
the impact that changes in the cosmological parameters would have on your   
predictions, since there's some variation in the estimates of these   
numbers.  
  
**> If there's anymore information which you think might be useful to us or   
> anything that you feel we should be asking you but having then that   
> would also be greatly appreciated. Also any sources which you could   
> reccommend for backgound reading which haven't already been given in the   
> introductory worksheet, perhaps specifically to the programming and   
> background theory would also be incredibly useful.**  
>  
You've probably got enough information for now; we can talk more about   
this next week. Also, remember that this is a student-led activity, so   
don't feel you have to follow some pre-defined path too much; it's not a   
case of there only being one right answer which we're expecting you to   
discover.  
  
> Thank you, Bethany Johnson  
  
Hope that's helpful. See you next week.  
  
Cheers,  
         Alastair

One more thing, Bethany: I am available for a "catch up session" on Monday   
if you need it. Let me know if this would be helpful; I'm free apart from   
a meeting 1-2pm.  
  
Cheers,  
         Alastair