

# Note on defining Spot OR input for delivery to HSC

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## 1 Introduction

### 1.1 Purpose of the document

This document has been written to enable the SPIRE team to fulfil the following task: "Agree with PS user input parameters for phase 1 proposals" due October 2004.

### 1.2 Background

The instrument teams shall provide the HSC with the parameters that an astronomer need to select/fill-in to make an observation request (OR) to Herschel. These user parameters, along with those set by the instrument teams, will be passed to the CUS scripts which will generate all the commands needed for the instrument and telescope to perform the observation request.

### 1.3 Document Structure

The following section lists the deliverables required by the HSC from the instrument team. Examples are given to demonstrate the need for the information and to show what is possible in Spot. Section 3 explains the needs for pictorial representation of the ORs. Section 4 talks about how the information can be provided.

### 1.4 References

[RD1] PACS spectroscopy AOT front-end definitions for Herschel SPOT/PHS by Roland Vavrek

[RD2] Preliminary Observing Mode Representation for HIFI in Herschel SPOT by A.P. Marston

## 2 Spot Front End Definition – Inputs Required

For each OR screen (=one or more observing mode) a list of parameters that require user input need to be provided to enable the observation to be fully defined.

- The name of the parameter and its corresponding name in the CUS.
- These parameters can be group under different headings such as 'source type' (e.g. point source, large source), 'instrument settings' (chop, nod, mapping...), etc. These are used to arrange the parameters on the OR screen.
- For parameters that require the user to fill in a number, the acceptable range of values for each parameter should be given. If a user enters a number outside of the valid range the number will not be accept and Spot will

present the user with a window stating the acceptable range.

- For pull down menus the options to be made available should be given. The order in which they should be presented to the user on the OR should be specified.
- The units (if any) associated with each parameter should be given.
- The text that the user will see on the screen should be given (this should include the units (if any)).
- Any dependencies between parameters should be given:

Example 1: PACS photometry OR gives the user a choice between 3 types of source extent to be observed: Point source, small source (single pointing) and large source. Only one of the three may be selected at anyone time (hence selecting a different one unselects the previously selected one).

Example 2: PACS photometry filter selection. Either one of the blue filters may be selected and/or the red filter. Hence there are the following options:

Blue Filter: Off, blue1, blue2  
Red Filter: Off, red

If the blue filters are set to ‘off’ then the software sets the red to be used if red was previously set to ‘off’ (and vice versa if red is set off when blue is already set to ‘off’ then blue1 is selected). As only one of the blue filters may be used then by selecting blue1, blue2 is set to de-selected by the software (and vice versa).

- When the user makes a selection or fills in a box, any options that are then not possible should be listed (these would then be greyed out when the user makes this selection).

Example: PACS photometry OR. When ‘large source’ is selected the ‘Set Map Parameters’ box is un-greyed and the Map Parameters window pops up to be filled in by the user.

- The default selections should be listed. These will appear when the user opens to OR screen. These are usually the smallest values/selections (i.e. point source, blue 1 and red 1 for PACS photometry) or the selection that will give the user the most science data (such as having blue1 and the red filter selected).

### **3 Visualisation**

[Note that delivery of this should not delay the delivery of the ORs, please send ORs as soon as ready and update with the visualisation information later]

To allow the astronomer to see how their OR on the sky there is a visualisation tool that shows an outline of the instrument field of views (different pointings, nods, chop) on a (user selected) map of the sky. The user can animate the OR to see how the observation is carried out. The shape and size of the fields of views to be shown to the user should be specified. The offset of any fields of view from the nominal (on-target) direction should be given. The expected way to display maps should be described. Also how the choices of the astronomer lead to the different operating modes, which in turn determine how many nods, chops etc. should be displayed on the visualisation.

### **4 Format of delivery**

The instrument team can provide the information in the way that they feel is most appropriate. Accompanying this document are the inputs from the PACS and HIFI teams [RD1, RD2]. The PACS one shows a relatively simple example, the HIFI format is more suitable to a more complicated OR. Note that since the OR screens were made the teams have been refining the screens. It might be useful to include flow diagrams of astronomer actions and use these to show the dependencies of the choices on the following allowed selections (see page 4 of [RD1] for an example).