# CNF Guide For Tone Reversal using Layout BEAMER

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There are two methods of performing tone reversal using Layout BEAMER. First method performs a Boolean operation between a drawn boundary and the pattern, whereas the second method employs user defined extents as a boundary.

STARTING BEAMER:
Start **Layout BEAMER** by logging into korat or minx using the icons on your desktop. On Windows, also start X-Windows, either Exceed or XMing. By typing **LayoutBEAMER** at the prompt you will see the following main window appear:

May 13, 2010
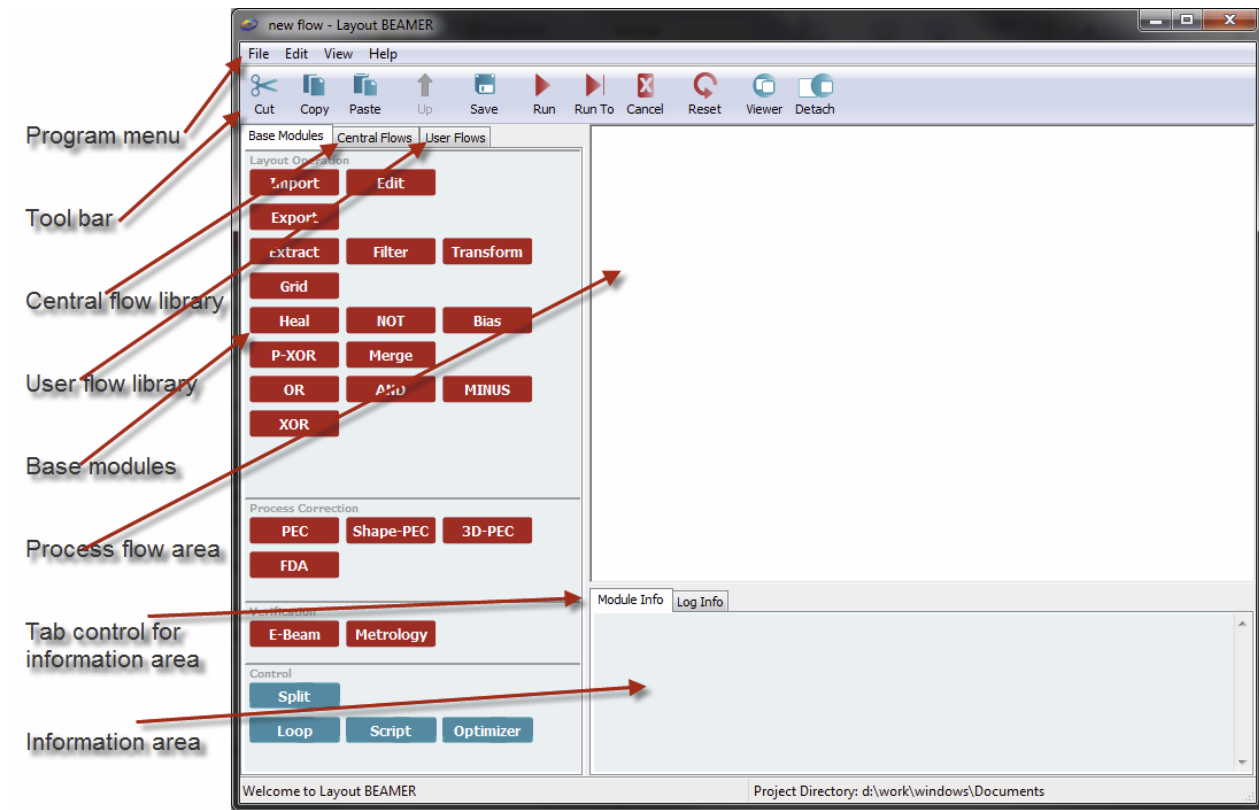
BOUNDING BOX METHOD

You should have a bounding box around your features. The bounding layer must be different than the feature layer. As an example, consider 10 x 10 array of circles (red layer) with a bounding box (green layer).
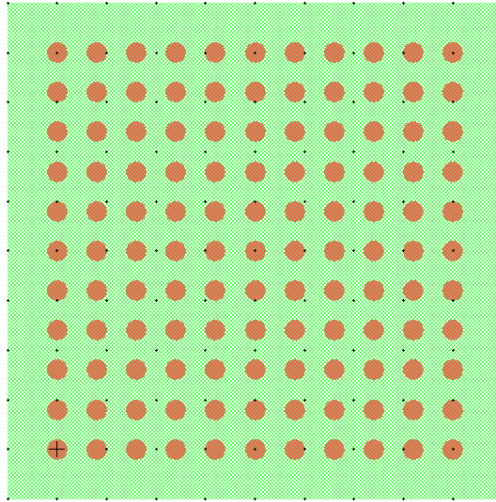

1. Drag & Drop 2 instances of the **Import** module into the process flow area. For both instances choose the same gds file (see below figure). Right click each **Import** and select **Run To**. Layout BEAMER will appear as:

May 13, 2010
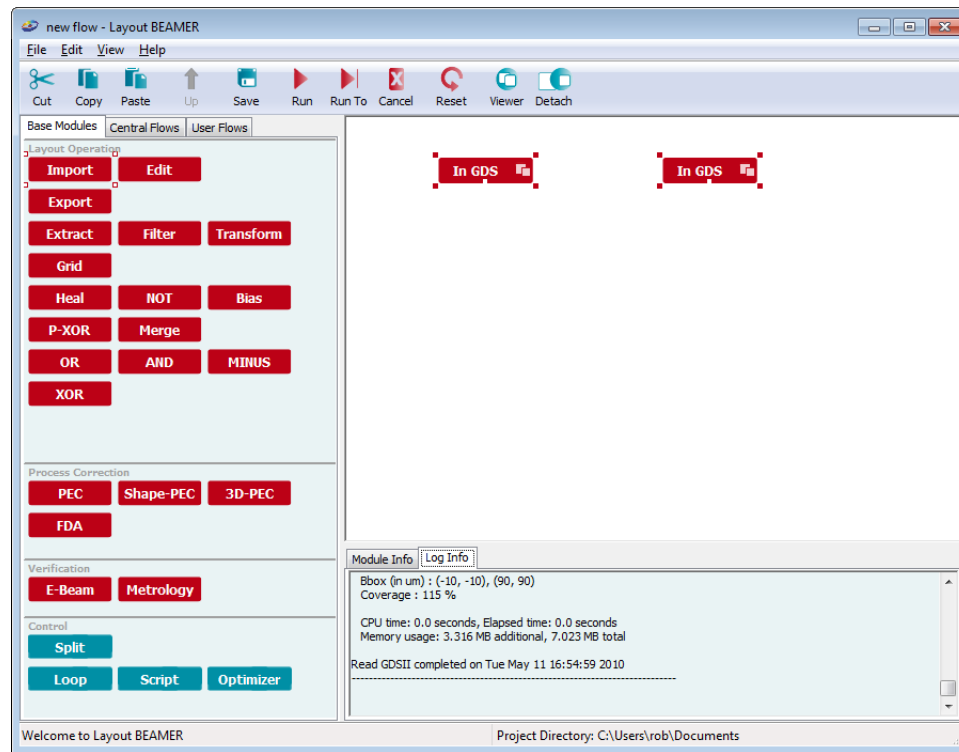
2. Drag & Drop 2 instances of the **Extract** module over the existing **Import** modules. To accomplish this, drag and drop a module from the library onto the target module in the flow until the small white connection port turns black, then release the mouse and the modules will be connected.


Over the left **Extract** choose the bounding layer and boundary cell, over the right **Extract** choose your data layer and respective cell, then click **OK**.

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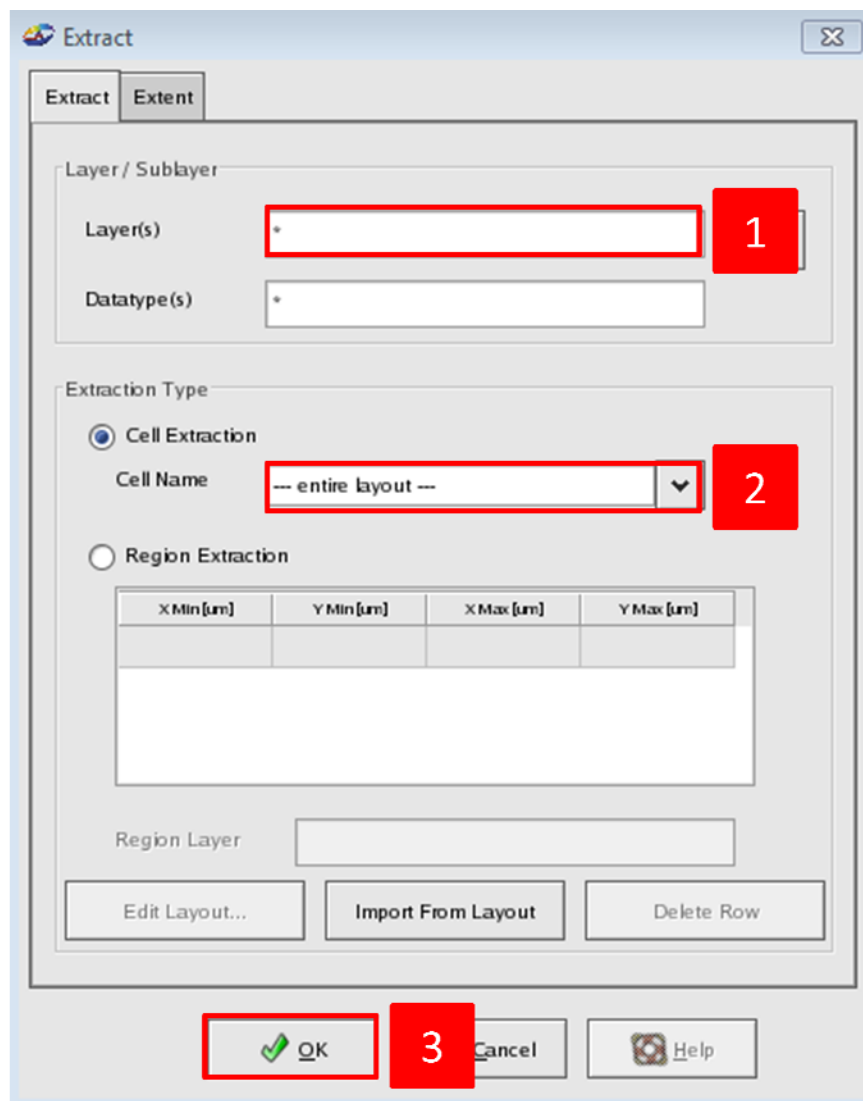
Right click each **Extract** and select **Run To**. The screen should appear as:
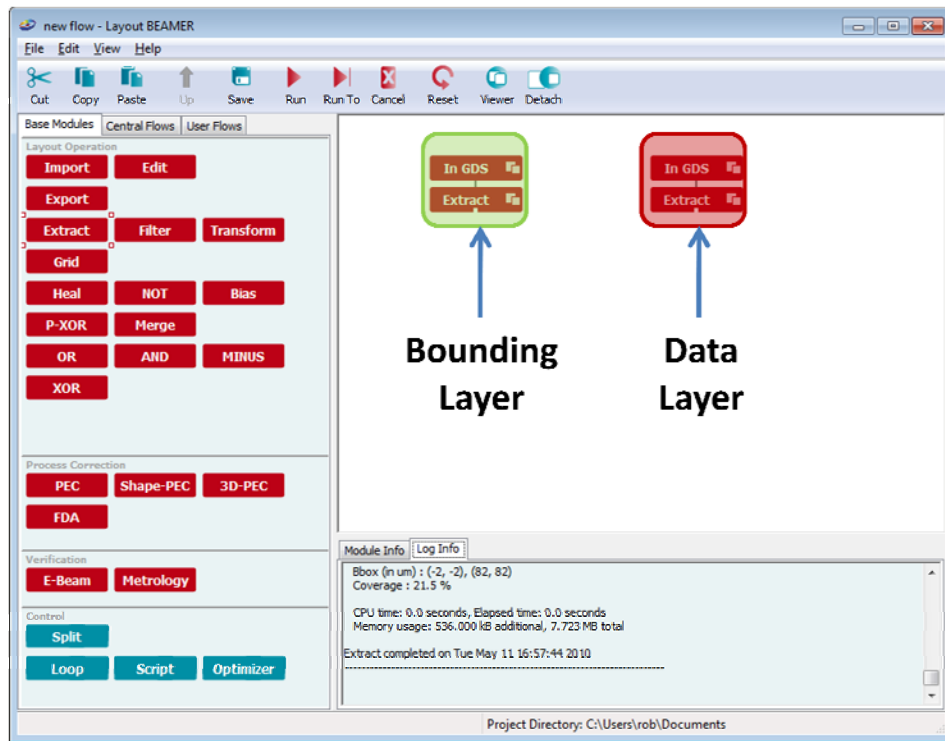
3. Drag & Drop the left side of the **Minus** module over the left **Extract** and the right side of the **Minus** module over the right **Extract**. Right click **Minus** and select **Run To** (see left figure below). Right click **Minus** and choose **View Layout**, then *View -> Fill Shapes* (right figure below shows the output of the **MINUS** operation)

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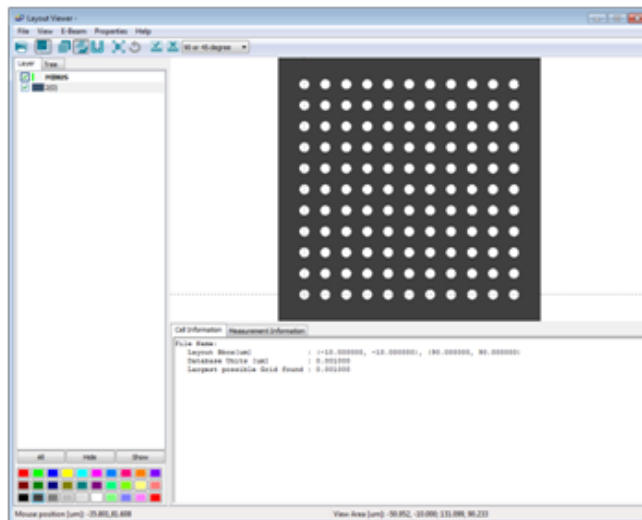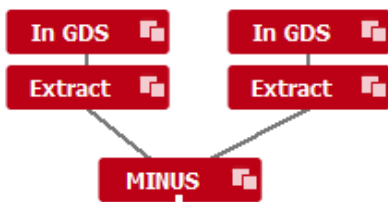
4. Drag & drop the **Export** module on top of **Minus**. Choose the file format (most likely GDS).
Right click **Export** select **Run To**.

USER DEFINED BOUNDARIES METHOD

This method does not need a drawn bounding box. Pattern extents are user defined.

STARTING BEAMER:
Log into **korat** or **minx** through a SunRay and type **LayoutBEAMER**

1. Drag & Drop an instance of the **Import** module and choose a gds file. To accomplish this, drag and drop a module from the library onto the target module in the flow until the small white connection port turns black, then release the mouse and the modules will be connected.

Right click on **Import** and select **Run To**. Drag & drop an instance of the **Extract** module over the **Import** module. Choose the cell and layer within the **Extract** tab. Click on the **Extent** tab. Default extents are **Automatic** extents defined by your pattern. Click **User** to manually specify user extents for the Boolean operation.

2. Drag & Drop an instance of the **NOT** module on top of the **Extract** module. Right click on **NOT** and select **Run To** (see left figure below). Right click on **NOT** and select **View Layout**, then *View -> Fill Shapes* (right figure below displays the output of the **NOT** operation).

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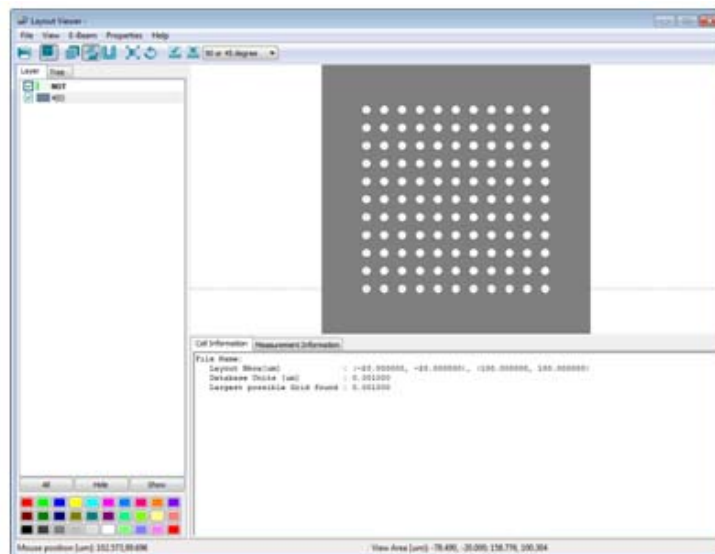
Drag & drop the **Export** module on top of **NOT**. Choose the file format (most likely GDS).
Right click **Export** select **Run To**.