



## j\_ima\_iros developments

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• Graceful handling of requests for many (>18) preselected sources

Increasing the number of components in a fit easily leads to instabilities. *j\_ima\_iros* has an internal limitation of 20 sources of which two are reserved for the background components allways used in the fits. This is not obvious to all users and occasionally a user has just asked *j\_ima\_iros* to provide fluxes for all sources known from previous missions. The future *j\_ima\_iros* versions will not reject such requests but will provide fluxes for 18 sources selected from the user list. The 18 sources selected from the beginning of the user list.

Decoupling of source finding process from source fitting process.

When *j\_ima\_iros* is used together with *mosaic\_spec* the user may want to define many energy bands. At present *j\_ima\_iros* goes through the whole source finding rigmarole for each energy band. This is a waste of time and will also reduce the chances for finding weak sources. Therefore the future *j\_ima\_iros* will use three pre-defined energy bands for the source finding part, and the images will be produced separately without invoking the source finding. This will also imply that the number of energy bands can be chosen freely.



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• Inconsistent "backprojection - source finding - PIF\_derivation"-loop

It was found that when backprojecting the pixel illumination function derived for a given source position a sky image was produced in which a source peak appeared slightly offset from the original position. This has been the cause of the persistent inability of  $j\_ima\_iros$  to proce clean residual maps. A significant reduction of the mismatch could be achieved by reducing the depth at which the incoming photons are assumed to interact from 10 to 3 mm.

• Energy dependent correction to source off-axis angles.

The backprojection process in *j\_ima\_iros* does not consider the energy dependencies of the photon detection. To do so would manyfold increase the memory requirements. The most obvious energy dependency is the increased photon mean free path in the detector gas with increasing energy. This must result in a systematic shift of the derived source position as function of off-axis angle. A small subroutine, *radcor*, has been written to compensate for this effect.

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Both of the following two effects have turned out to be small but they have been introduced to be sure that this was indeed the case.
Modify *getRAdec* and *getxy* routines to use the JEM-X boresight rather than the startracker boresight as the origo for the tangent-projection.
Introduction of temperature correction terms in *getRAdec* and *getxy*.











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