The VLTI Observation Preparation Tools VisCalc and CalVin

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In order to plan an interferometric observation and to assess its feasibility, one needs adequate tools to model the visibility for a specified array configuration, taking into account constraints like shadowing effects or the range of the delay lines. In addition, appropriate calibration stars must be selected. Two specific tools are provided for this purpose: the VLTI Visibility Calculator (VisCalc) and the calibrator selection tool (CalVin). VisCalc provides calculations of simulated dispersed visibilities based on software models of the VLTI instruments. The declination and spectral energy distribution, as well as the source geometry, are parameters used to specify the observation target. Visibilities are calculated analytically for uniform discs, gaussian discs and binaries. Visibilities may also be calculated numerically for a user-provided brightness distribution which is uploaded as a FITS file. The user-specified observation conditions include the starting hour angle and the duration of the observation, as well as the instrument and array configuration. Different results can be displayed (Fig. 1) including the uv-tracks, the input image and its Fourier transform, plots of visibility versus time, visibility squared versus time, loss of correlated magnitude, or the illumination distribution.

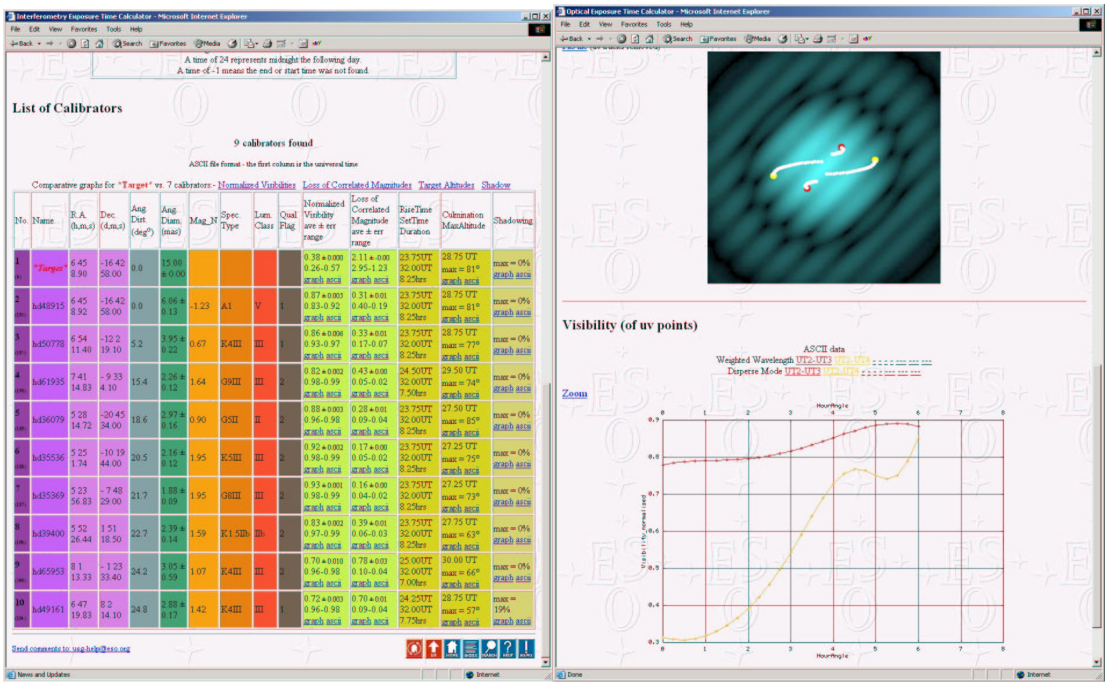

Fig. 1: Sample results from the calibrator selection tool CalVin (left) and from the visibility calculator VisCalc (right).

The calibrator selection tool (CalVin) provides a similar interface and involves a two stage selection process. On the first input page, the target coordinates, the array and instrument configurations can be selected. The default search criteria are displayed on an intermediate page which allows the search parameters to be refined. On the results' page, the table of matching calibrators (Fig. 1) is listed. For all matching calibrators, the visibility and "observability" information is calculated and displayed. It is then possible to use VisCalc for a more comprehensive calculation of the visibility information.

Both tools can be accessed from the VLT Exposure Time Calculators page on http://www.eso.org/observing/etc. The standard version shows only those configurations that are offered for the current Call for Proposals. It is updated for each new Call for Proposals in order to reflect the offered VLTI baseline configurations and instrument modes. An "expert" version, accessible from the ETC preview page (http://www.eso.org/observing/etc/preview.html) offers an extended interface with many more choices. It supports the modes and configurations that are currently not offered.