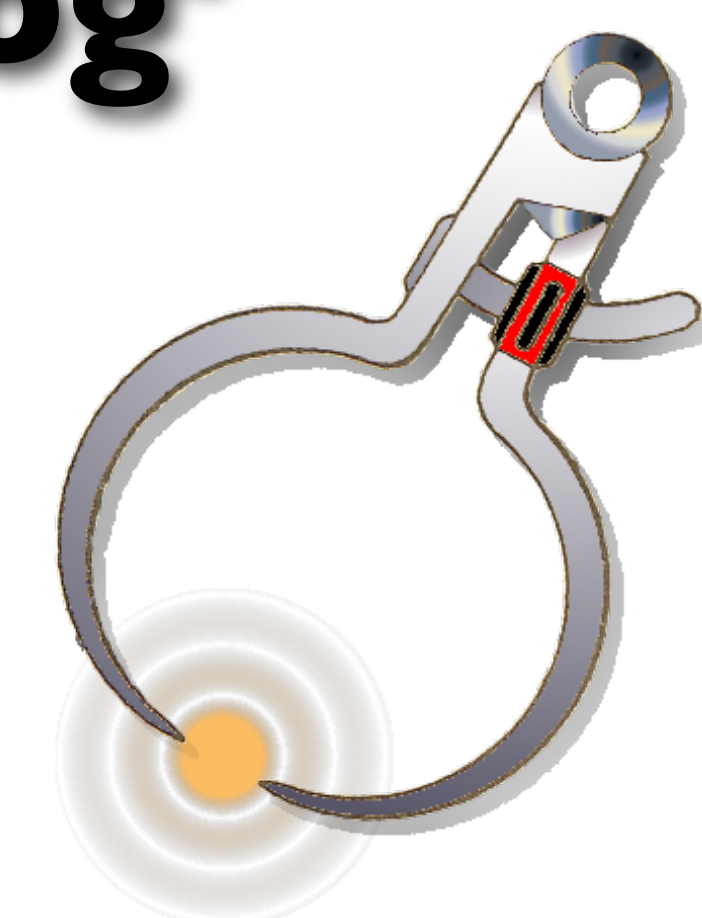


Building the 'JMMC Stellar Diameters Catalog' using SearchCal

Sylvain Lafrasse^a, Guillaume Mella^a, Daniel Bonneau^b, Gilles Duvert^a, Xavier Delfosse^a, Olivier Chesneau^b, Alain Chelli^a

^a Université Joseph Fourier - Grenoble I / CNRS, Laboratoire d'Astrophysique de Grenoble (LAOG) UMR 5571, BP 53, 38041 Grenoble Cedex 09, France
^b UMR 6525 H. Fizeau, Univ. Nice Sophia Antipolis, CNRS, Observatoire de la Côte d'Azur, Av. Copernic, 06130 Grasse, France

*sylvain.lafrasse@obs.ujf-grenoble.fr; phone +33 4 76 63 55 30; fax +33 4 76 44 88 21; www-laog.obs.ujf-grenoble.fr
 This poster is also available online at <http://www.jmmc.fr/doc/approved/JMMC-POS-2600-0003.pdf>



A good calibration of visibilities is paramount for optical interferometry. This calibration is performed using "calibrators", stars whose angular diameter is ascertained by direct or indirect methods. **SearchCal** is one piece of the **JMMC** software portfolio dedicated to Optical Long-Baseline Interferometry. It computes **stellar angular diameters** from **CDS-based photometric catalogs** using published functional relationship between multi-band photometry and surface brightness. To overcome latency and dependency on network resources for the frequently used bright star queries, we compiled a static catalog of bright star diameters, known as **JSDC** (JMMC Stellar Diameters Catalog), containing **38472 entries**. In the present version of JSDC, we use the "Bright" option of SearchCal presented in Bonneau et al. (2006). This method imposes that the selected stars have a parallax measurement. Such choice limits the number of faint calibrators available but provides greater accuracy in the determination of angular diameters. We detail how this catalog is built and analyzed. We also present a corollary effort known as **BadCal**, to collect data about stars observed and flagged as "bad calibrators".

Name	RAJ2000	DEJ2000	pmRA	pmDEC	Bmag	Vmag	Rmag	f_Rmag	Imag	f_Imag	Jmag	Hmag	Kmag	LDD	e_LDD	UDDB	UDDV	UDDR	UDDI	UDDJ	UDDH	UDDK	plx	e_plx	SpType	Teff	logg
HIP98541	20 01 04 955	-59 08 25 79	2.75	-1.37	8.156	8.215	8.231	0	8.318	0	8.33	8.388	8.389	0.052	0.0040	0.049	0.05	0.05	0.05	0.051	0.051	0.051	5.57	1.12	B7III	12000.0	3.378
H...			5.2	4.07	4.856	4.652	4.49	1	4.4				4.179	0.517	0.036	0.488	0.4	0.503	0.507	0.51	0.511	14.47			8750.0	3.328	
TYC...			0.57	11.1	10.857	10.425	10.033	0	9.742				9.361	0.064	0.05	0.05	0.05	0.053	0.053	0.054	0.054				6370.0		

Scientific Goals :

- Whole sky covered
- $-5.0 < K \text{ mag} < 20.0$
- Tight result filtering
- Computed photometric angular diameters



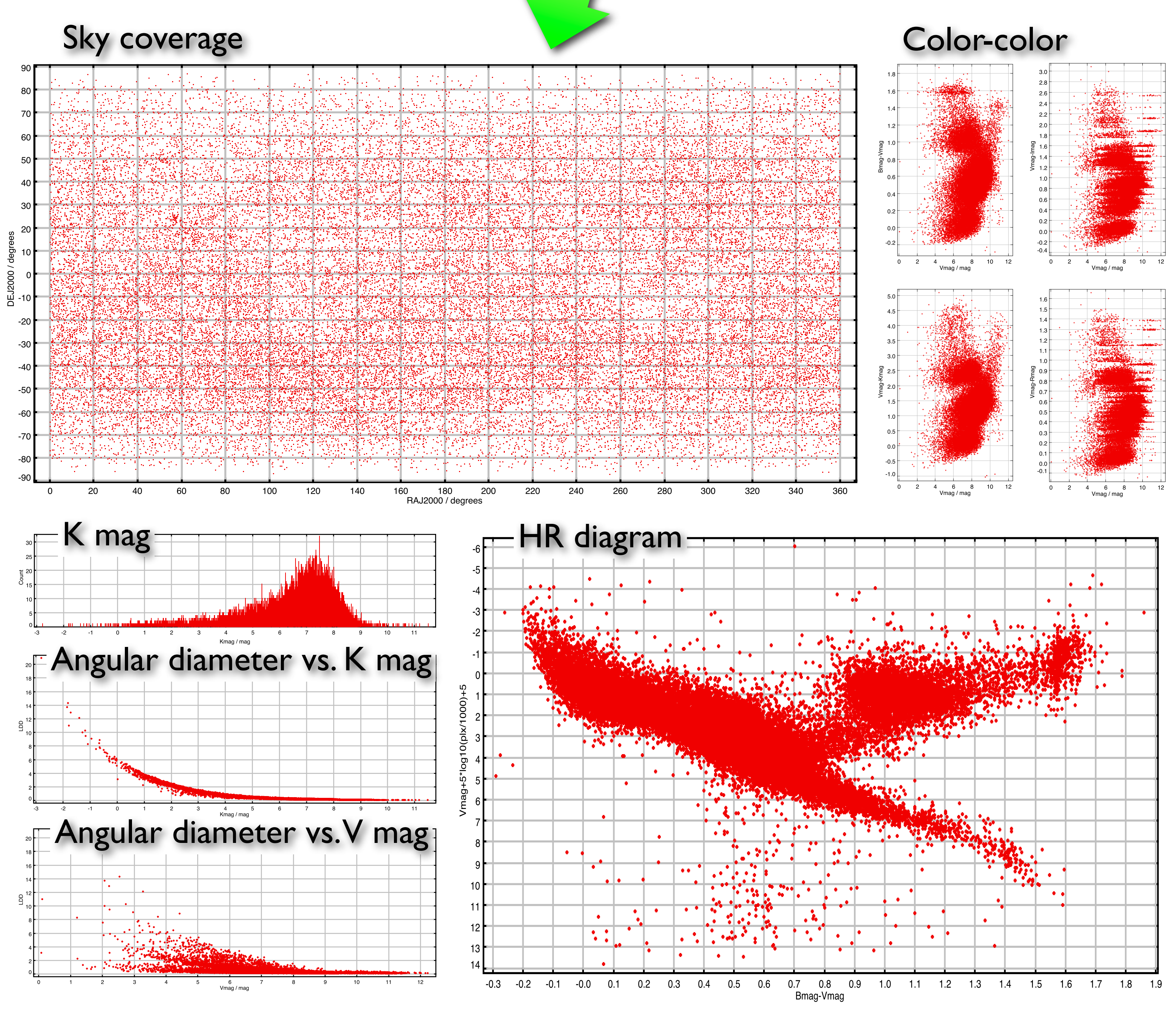
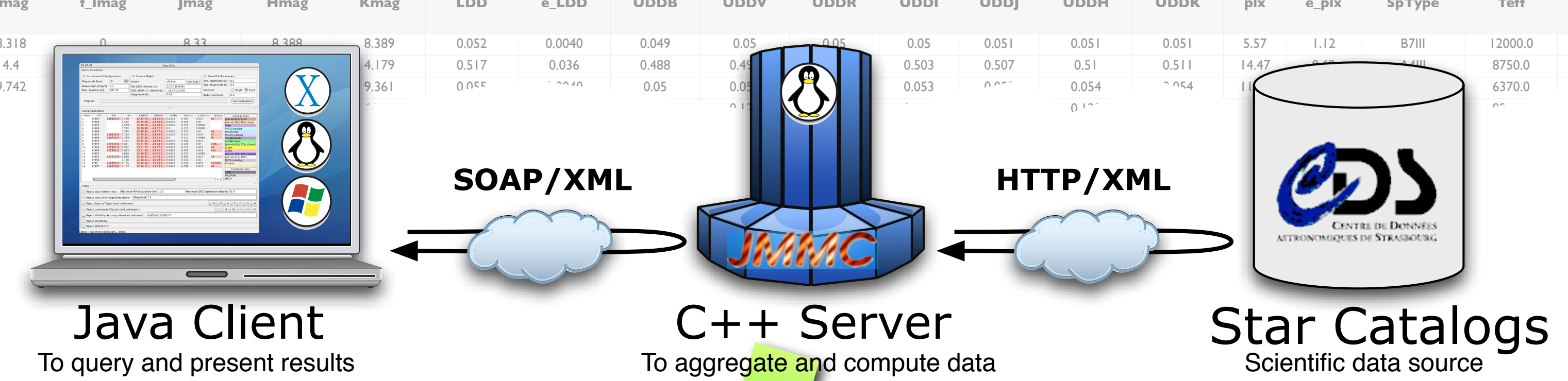
Technical Solutions :

- Sky mozaicing
- Use SearchCal batch mode
- VOTables aggregation (STILTS)
- Duplicate stars filtering
- Stellar multiplicity filtering

Results Analysis :

- 38472 stars with computed diameters (Limb-Darkened and Uniform Disk Diameters)
- $-2.81 < K \text{ mag} < 11.48$
- $0.01 \text{ mas} < \text{LDD} < 20.87 \text{ mas}$
- No bias between computed and measured angular diameter
- Accurate ($\delta\theta/\theta < 10\%$)

➔ <http://www.jmmc.fr/jsdc>



id	ra (deg)	dec (deg)	ra_sxxa (HH_MM_SS.SSS)	dec_sxxa (DD_MM_SS.SSS)	name	insname	interferometer	user_name	affiliation	sub_date	obs_date	baseline (m)	wavelength (um)	user_comment	jmmc_comment
1	10.8649570833	47.0245463889	00 43 20.0697	+47 01 28.367	HD 4058	PTI	PTI	Bob Thompson	Catech	2010-04-01 14:47:46.0					
3	41.1373908333	15.06166667	02 41 29.9738	+15 18 42.702	HD 17036	V2	KI	Rafael Milon-Gabet	Catech / MSC	2010-04-01					Extracted from IAU Registry
5	52.0127904167	49.0346319	02 41 29.9738	+49 03 46.319	HD 21278	VEGA	CHARA	Denis Vigan	OCA	2010-04-01					Extracted from IAU Registry
6	54.2182633333	00 24 05.982	00 24 05.982	+00 24 05.982	HD 22484	VN	KI								

BadCal :

- Easy but moderated submission using star name, comments and instrumental configuration.
- Web and VO-compliant

➔ <http://www.jmmc.fr/badcal>

