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Document Title: **Measured Encircled energy distribution
profile for VISTA**

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1 Introduction

This document reports the measured encircled energy distribution for VISTA.

2 Acronyms and Abbreviations

EED Encircled Energy Distribution

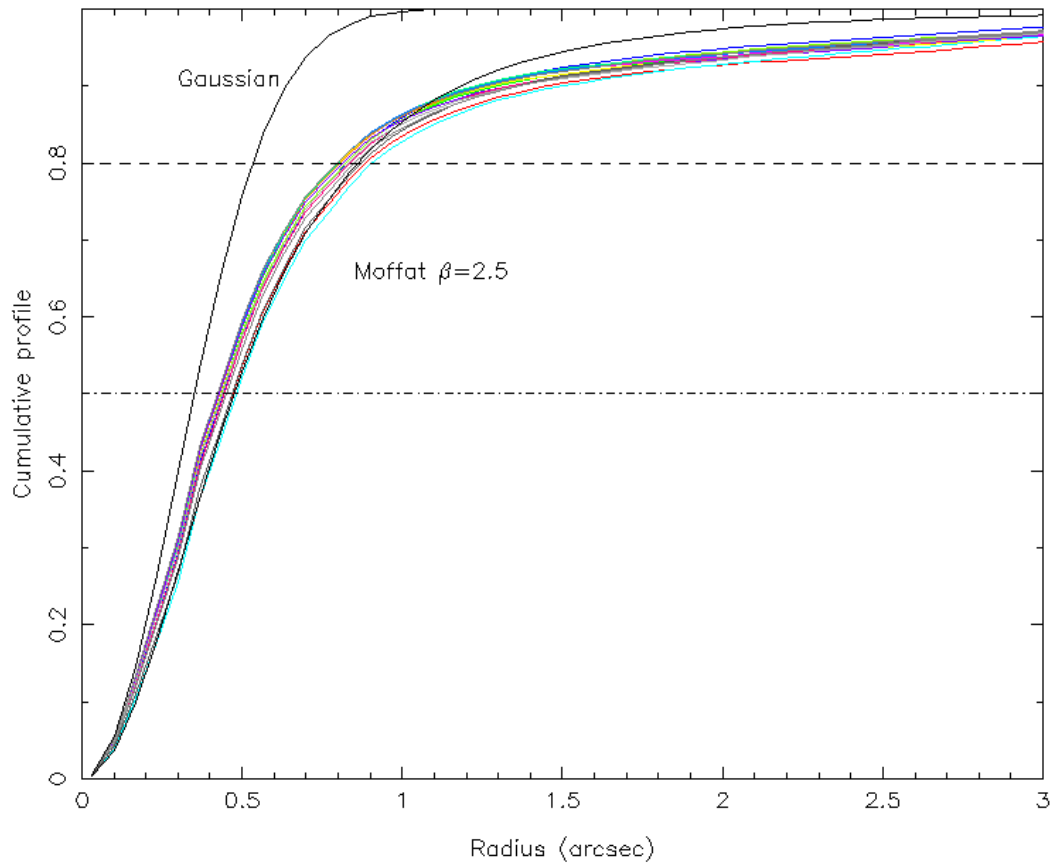
PSF Point Spread Function

3 EED Profiles

The EED profiles presented in this note were kindly measured by Mike Irwin of CASU from measured images obtained when the reported image FWHM was 0.7 arcsec. Fully sampled azimuthally averaged PSFs were derived by using all the stellar images (above a threshold) on each detector, which will, by chance, lie at many offsets relative to the pixel centres, thereby providing the full sampling in a way that measuring any individual PSF cannot.

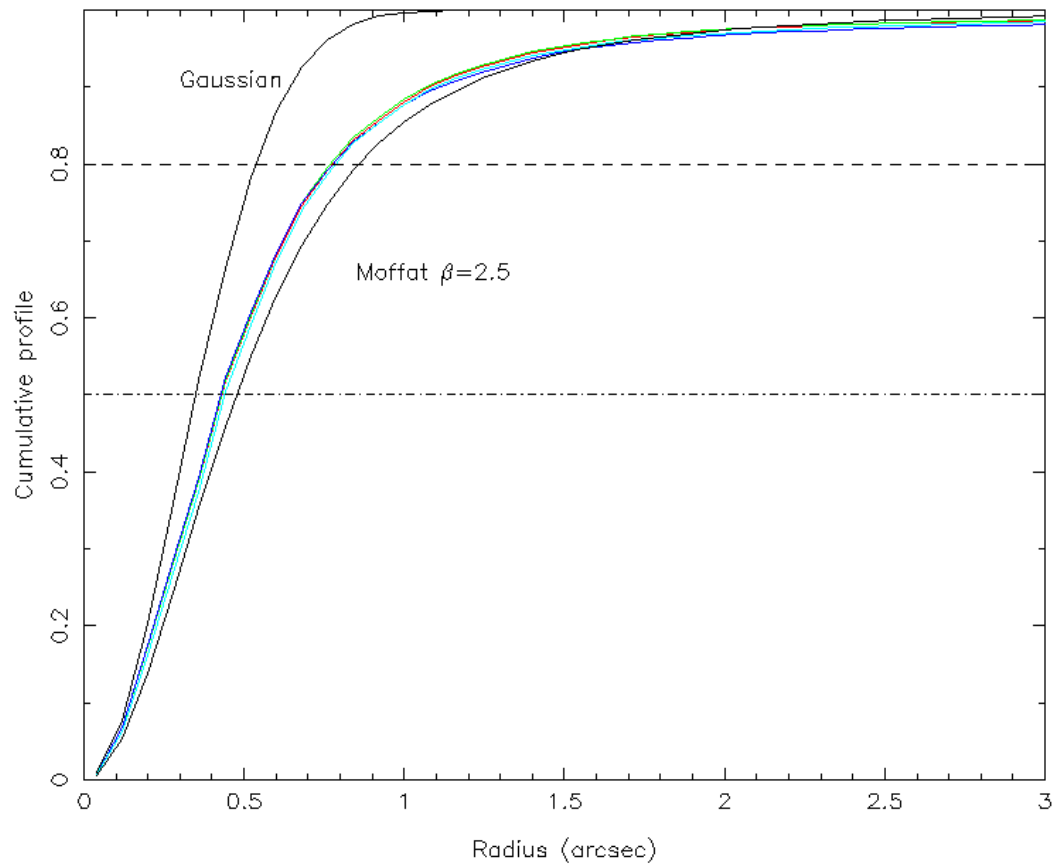
The measure PSFs were then used to generate the cumulative encircled energy distribution as a function of radius. This is plotted together with cumulative Gaussian and Moffat profiles.[$I(r) = I(0) (1 + (r/\alpha)^2)^{-\beta}$ Moffat (A&A 3,455,1969)] with $\beta=2.5$ for the Moffat profiles.

4 VISTA EED Profile



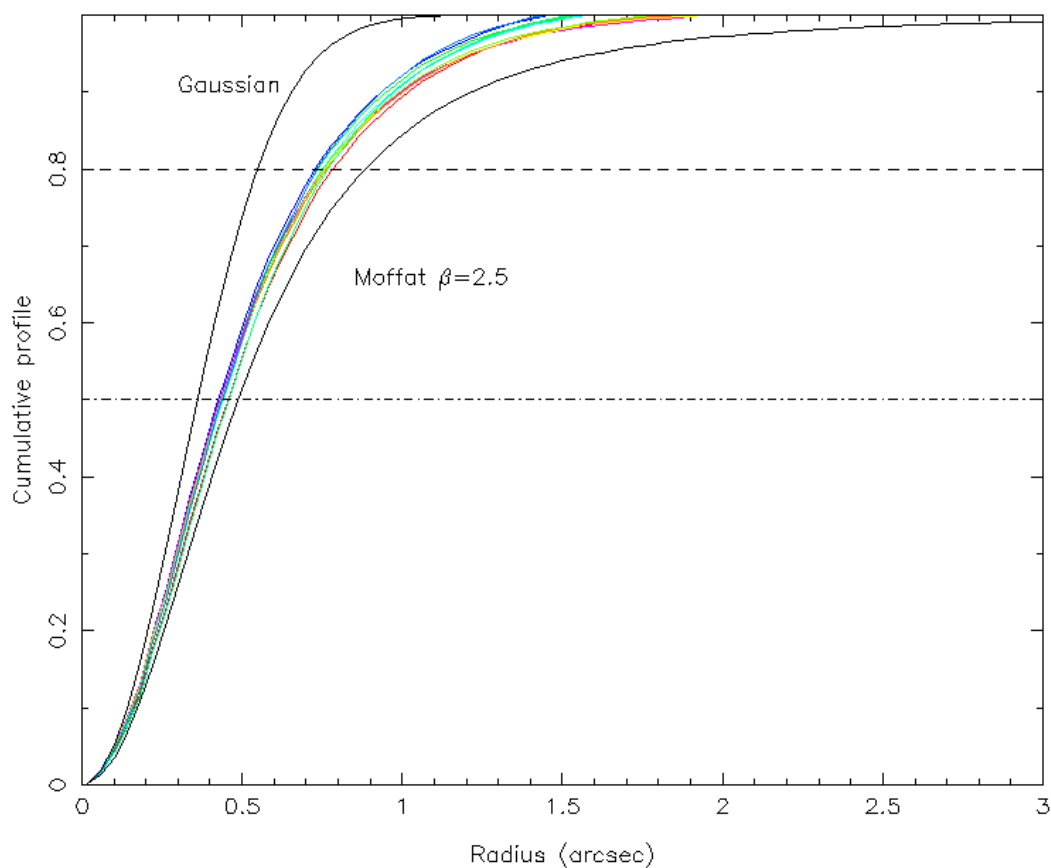
The VISTA profile was generated from images taken during excellent seeing on 2009 10 05 during the PR runs.

5 WFCAM EED Profile



The WFCAM profile does not make use of microstepping.

6 Subaru EED Profile



The Subaru profile was obtained in g-band

7 Comparison of Profiles at EED50 and EED80

Note that none of the profiles are Gaussian and all are better described by a Moffat profile with $\beta=2.5$ than by a Gaussian. The measured values of EED80 and EED50 read off from each of the plots above are given in the following table.

Telescope	FWHM	EED50	EED80	EED50/EED80	Date/obs
VISTA	0.7	0.45 (0.42-0.49)	0.85 (0.8.0.9)	1.89	2009-10-05 216
WFCAM	0.7	0.42	0.78	1.85	
Subaru	0.7	0.45	0.75	1.67	g-band