GROUND-BASED IMAGING FOR THE EUCLID MISSION
Need for ground-based imaging

- Euclid bands: [RIZ] (very broad), Y, J, H
- Want accurate photz to $I_{AB} = 24.5$ ($\delta_{sys} < 0.2\%$)
Need for ground-based imaging

- Diffraction limited PSF ranges from 0.18 to 0.3"
- Need to measure colours (SEDs) of STARS and GALAXIES accurately. Assume $r_{\text{psf}}=0.24$, correct with 0.18-0.3"
Survey parameters

- Area covered
- Median redshift
- Image quality
- Wavelength coverage

<table>
<thead>
<tr>
<th>Area (sq.deg)</th>
<th>$z_{med}$</th>
<th>$U$</th>
<th>$K$</th>
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<td>20000</td>
<td>0.2</td>
<td>0.8</td>
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Projects:
- SDSS
- UKIDSS
- VHS
- CFHT-D
- CFHT-W
- DES
- PS1
- VIKING
- PS4
- LSST
- EUCLID
# Planned Surveys

<table>
<thead>
<tr>
<th>Survey</th>
<th>Filters</th>
<th>Total</th>
<th>Year</th>
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</tr>
<tr>
<td>KiDS/VIKING VST+VISTA</td>
<td>ugri ZYJHK</td>
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<td>2011-14</td>
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<tr>
<td>LSST</td>
<td>ugriz ?</td>
<td>20000</td>
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</table>
Photo-z’s

Abdalla + al. (2008)
Photo-z’s

Abdalla + al. (2008)
Including IR (J & H)
(N.B. no Y band)

Checking with spec-z
CRUCIALLY important
0.1% photo-z precision?

“LSG” survey: simple model for spectral break
$\Delta z$ (red-yellow) = 0.01
Sky coverage from ground

• South: LSST 5000 sqdeg planned
  – Rest:
    • LSST will do the rest?
    • Extend DES survey?
    • VST?

• North: PanStarrs 1-2 30000 sqdeg planned
  – Alternatively:
    • PS4?
    • Subaru HyperSuprime
    • UV with CFHT?
Concluding:

• Ground-based optical colours crucial
  – Photo-z
  – PSF correction

• Goals ambitious
  – Beauty of Euclid mission: possibility for simultaneous cross-checks