Why wise has been originally blurred?

balmer series - to make it happen we need to put electron to the 2nd energy level!!! this is possible only around new/hot stars (star-forming regions)

question to Haojing - we performed our own photometry on Jiang's files because there were sources that are not in his catalogs, but later we MATCHED our catalogs and I only left sources that are in both catalogs. Then the question why we did this photometry still stays....

credits:

2.1 - http://dustpedia.com/science.php
Fig 2. An example of the multiphase SED modelling proposed in DustPedia. The data is fitted using the model of Galliano et al. [47, 48]. This example, applied to M82, uses an extensive range of data including Spitzer, IRAS, ISO, WISE, 2MASS (J, H, and K) and Herschel.

2.2 - http://candels-collaboration.blogspot.com/2012/08/the-multi-wavelength-shapes-of-galaxies.html
Candels
Spectral energy distributions for typical galaxies - an old elliptical galaxy (red), two types of spiral galaxies (Sb in green and Sd in blue), an AGN (Markarian 231, solid black), a QSO (dotted black), and a merging and star-bursting galaxy Arp 220. Template spectra are taken from Polletta et al. 2007.

2.3 - http://elte.prompt.hu/sites/default/files/tananyagok/InfraredAstronomy/ch10.html
Galiamo
The prospective multiphase SED of a galaxy (the model of Galliano et al. 2008), highlighting the combined complexity of the stellar sources, the dust emission and the gas lines. This figure demonstrates the contribution of the various phases of the ISM to the total SED of a galaxy.#�
In the top of the figure the wavelength ranges of the main infrared to millimetre observatories are overlaid. (Galliano et al. 2008)

2.4 - http://www.star.uclan.ac.uk/~ccp/sed_891.jpg
Dr. Cristina Popescu
Modelling the spectral energy distribution of galaxies

3.1 - http://newscenter.lbl.gov/2009/10/01/first-light-boss/

One of the BOSS cartridges containing 1,000 optical fibers, which guide light from specific target galaxies and quasars to the spectrograph; Sloan Foundation telescope in background (photo by Dan Long, Senior Operations Engineer, Apache Point Observatory - click on image for best resolution)

3.2 - https://www.ing.iac.es/PR/newsletter/news4/science1.html
Robert Sharp, Simon Hodgkin, Richard McMahon and Mike Irwin (Institute of Astronomy)

Figure 1. By using a parameterization of the absorption of the intergalactic medium, the colours of high redshift quasars can be simulated to predict which regions of colour space should be searched for quasar candidates. At redshift z=5 the Lyman- emission line (strong in almost all quasar spectra) is in the i' pass band and the Lyman- forest suppresses the r' band. The object will generally be absent from g' and u' band images. Normalized survey filter responses are also shown; Solid lines — INT filter set; dashed lines — SDSS filter set. A representative CCD response function and atmospheric transparency are included in

the filter responses.

4.1 -
http://wise2.ipac.caltech.edu/docs/release/allwise/expsup/figures/sec1_2af1.png

4.2 - http://sites.psu.edu/astrowright/wp-content/uploads/sites/9476/2015/04/SilvaFig.png
Jason Wright
Figure from our second paper. SEDs are for an old elliptical, a typical spiral, and Arp 220, a starburst galaxy. The green and orange curves include the effects of 10% and 35% of the starlight being reprocessed as waste heat.

6 - http://classic.sdss.org/dr7/coverage/stripemap.gif
Full Footprint with Stripe Labels
SDSS team

7.1 - Jiang et al. 2014
5σ detection limits of the aperture (3. ## 2 diameter) magnitudes for point sources in scanline 08 of the co-adds (solid lines). The dotted lines are the magnitude limits for the Annis et al. (2011) co-adds, and the dashed lines are the magnitude limits for single-epoch (Run 4263) data. Run 4263 is one of the best runs for Stripe 82. Our co-adds are 1.9–2.2 mag deeper than the best SDSS single-epoch data, and 0.3–0.5 mag deeper than the Annis et al. (2011) co-adds.

7.2 - Jiang et al. 2014
PSF FWHM in the five bands in scanline 08 (N scanline 2) of the co-adds. The PSF FWHM in the riz bands is roughly 1 ## , and in the ug bands is about 1. ## 3–1. ## 5.

7.3 - Jiang et al. 2014
Direct comparison between a single-epoch i-band frame (left panel), the Annis et al. (2011) co-add (middle panel), and our co-add (right panel). The PSF sizes are similar (0. ## 8–0. ## 9). The image size is 1. # 3 × 1. # 3 located at 21 h 29 m 30 s –00 d 32 m 20

7.4 Lang et al. 2014
One example image: coadd tile 1384p454, band W 1. Top row: intensity images. Overall, my coadds and the AllWISE Release coadds are very similar.
Second row: zoom-in of intensity images to the middle 5% of the image. Here it is clear that the AllWISE Release coadds have been artificially blurred, while mine maintain full resolution. Bottom row: number of images included in coadd.

7.5 Lang et al. 2014
Coadd pixel distributions for example tile 1384p454, band W 1. Each curve shows the coadd intensity values divided by the per-pixel uncertainty val-ues. The broad histogram labeled “WISE” shows the AllWISE Release intensity over uncertainty maps, after estimating and removing a scalar background using the method described above. In the absence of sources and varying backgrounds, this should approximate a Gaussian with unit standard deviation. Sources add the positive tails, and a varying background would broaden the distribution. The AllWISE Release pixel distribution is considerably broader than expected (the uncertainty maps do not capture the pixel variations) by more than a factor of two (the top thin guidelines are Gaussians with standard deviations 2 and 2.5). Splitting the image into 5 × 5 subimages, the subimage distributions show a slightly narrower distribution, though still broader than expected (the guide-√ lines show Gaussians with standard deviations 2 and 2); the 20×20 subimages(not shown here) are similar. This suggests that if background variations are responsible for this effect, the relevant scale is smaller than ~200

pixels. This effect
was less pronounced in the All-Sky Release Atlas Images. The curve labeled "unWISE" shows the unWISE coadd image times the square root of inverse-variance maps, with no scaling or adjustments. This distribution is very close to unit Gaussian (plus source tail). The WISE curves are shifted higher because the WISE coadds have a smaller pixel scale and hence more pixels.

10.1 example of convolution
from Wikipedia, author Brian Amberg

16.1 http://cosmos.phy.tufts.edu/~danilo/MuzzinEtal2013/Muzzin_et_al._(2013).html
Stellar mass functions of all galaxies, quiescent galaxies, and star-forming galaxies in different redshift intervals. The shaded/hatched regions represent the total 1σ uncertainties of the maximum-likelihood analysis, including cosmic variance and the errors from photometric uncertainties as derived using the MC realizations. The normalization of the SMF of quiescent galaxies evolves rapidly with redshift, whereas the normalization for star-forming galaxies evolves relatively slowly. In particular, there is almost no change at the high-mass end of the star forming SMF, whereas there is clear growth at the high-mass end of the quiescent population. There is also evidence for evolution of the low-mass end slope for quiescent galaxies. At low-redshift a double Schechter function fit is required to reproduce the total SMF.

16.2 - http://cosmos.phy.tufts.edu/~danilo/MuzzinEtal2013/Muzzin_et_al._(2013).html
muzzin
Evolution of the stellar mass density in the universe between z=0–8.5. The SMDs determined from UV-selected samples are shown at z>3.5. Below z<3.5 the KS-selected SMDs from UltraVISTA are shown for the total (black), star forming (blue) and quiescent (red) populations. The z~0 data from Cole et al. (2001) (triangle), Bell et al. (2003) (circles) and Baldry et al. (2012) (squares) are also shown. The SMD in star-forming galaxies from the KS-selected and UV-selected samples agrees to within 1σ suggesting that UV-selected samples account for most of the SMD at z>3.5. The dashed gray curve shows a simultaneous fit to the total SMD from UltraVISTA at z>1.5 and the UV-selected samples, and the dashed maroon shows a fit to just the UV-selected samples, both of which agree well.

16.3 - https://ned.ipac.caltech.edu/level5/March14/Madau/Figures/figure11.jpg
Madau Dickinson 2014
The evolution of the stellar mass density. The data points with symbols are given in Table 2. The solid line shows the global stellar mass density obtained by integrating the best-fit instantaneous star-formation rate density ψ(z) (Equations 2 and 15) with a return fraction R = 0.27.

18.1 - https://ned.ipac.caltech.edu/level5/Sept14/Dunlop/Figures/figure1.jpg
An illustration of the redshifted form of the rest-frame ultraviolet spectral energy distribution (SED) anticipated from a young galaxy at z ≃ 7, showing how the ultraviolet light is sampled by the key red optical (i775, z850) and near-infrared (Y105, J125, H160) filters on-board HST (in the ACS and WFC3/IR cameras respectively), while the longer-wavelength rest-frame optical light is probed by the 3.6 μm and 4.5 μm IRAC channels on-board Spitzer. Wavelength is plotted in the observed frame, with flux-density plotted as relative fν (i.e. per unit frequency). The spectrum shows the sharp drop at λrest = 1216 Å due to the strong "Gunn-Peterson" absorption by intervening neutral hydrogen anticipated at this redshift (here predicted following Madau (1995); see also the observed spectrum of the most distant quasar shown in Fig. 2). Longward of this "Lyman-break" the spectrum shown is simply that of the intrinsic integrated galaxy starlight as predicted for a 0.5 Gyr-old galaxy by the evolutionary spectral synthesis models of Bruzual & Charlot (2003) (using Padova-1994 tracks, assuming constant star formation, zero dust extinction, and 1/5th solar metallicity). The characteristic sharp step in the

galaxy continuum at λ_{rest} = 1216 Å (which at $z \simeq 7$ is predicted to result in a very red $z_{850} - Y_{105}$ colour) holds the key to the effective selection of Lyman-break galaxies at $z > 5$, as discussed in detail in section 3.1. The theoretical spectrum shown here does not include the Lyman-α emission line which is produced by excitation/ionization of hydrogen atoms in the inter-stellar medium of the galaxy; this offers the main current alternative route for the selection of high-redshift galaxies (see Fig. 8 and section 3.2), and the only realistic hope for spectroscopic confirmation of galaxy redshifts at $z > 5$ with available instrumentation. Also not shown are other nebular emission lines at rest-frame optical wavelengths, which can complicate the apparent strength of the key Balmer or 4000 Å break as measured by the IRAC photometry. In the absence of serious line contamination, the strength of this break offers a key estimate of the age of the stellar population, with consequent implications for a meaningful measurement of galaxy stellar mass. The gap between the WFC3/IR and IRAC filters can be filled for brighter objects with ground-based K-band imaging, but will not be covered from space until the advent of JWST (courtesy S. Rogers).