

Table 4. Columns in the two photometry catalogs

Column Name	Units	Description
ID ^a	—	A3COSMOS master catalog ID (version 20170426), which equals Laigle et al. (2016) COSMOS2015 catalog ID when ID ≤ 1182108 .
ID_PriorCat ^a	—	The original ID in the Ref_ID_PriorCat-th prior catalog.
Ref_ID_PriorCat ^a	—	The reference number of the prior catalog in which the source is first included (see Table 2).
RA	degree	The fitted R.A. coordinate of the ALMA emission with Gaussian source models, in equatorial coordinate in the epoch of J2000.
Dec	degree	Same as above but is Dec. coordinate, in equatorial coordinate in the epoch of J2000.
Total_flux_pbcor	mJy	The fitted total flux with Gaussian source models, corrected for flux bias and primary beam attenuation.
E_Total_flux_pbcor	mJy	Error in Total_flux_pbcor, provided by photometry pipelines based on Condon (1997) simulation statistics and equations.
E_Total_flux_sim_pbcor	mJy	Error in Total_flux_pbcor, but estimated from our own simulation statistics.
Pbcor	—	Primary beam attenuation factor.
Primary_beam	arcsec	ALMA 12 meter antenna’s primary beam FWHM size at the observing frequency.
Peak_flux	mJy/beam	Fitted ALMA continuum emission’s peak flux, uncorrected for primary beam attenuation.
RMS_noise	mJy/beam	Pixel rms noise in the continuum image.
Obs_frequency	GHz	Observing frequency, i.e., the center frequency of all collapsed spectral windows.
Obs_wavelength	μm	Observing wavelength, $= (2.99792458 \times 10^5) / \text{Obs_frequency}$.
Maj_beam	arcsec	Synthesized beam’s major axis FWHM size.
Min_beam	arcsec	Synthesized beam’s minor axis FWHM size.
PA_beam	degree	Synthesized beam’s position angle, zero means to the North.
Image_file	—	Image file name.
Flag_multi ^b	—	Flag = S (or M) means the source is fitted with single (or multiple) Gaussian component(s).
Galfit_reduced_chi_square ^a	—	The reduced χ^2 of galfit prior source fitting, measured from the residual image for each source with an aperture of 1.0 arcsec in diameter.
Flag_size_upper_boundary ^a	—	Flag = 1 means the fitted source major axis FWHM size reaches the upper boundary of 3.0 arcsec and should be used with caution.
Flag_inconsistent_flux	—	Flag = 1 means the source has $> 5\sigma$ inconsistent total fluxes from our prior and blind photometry.

^a Only in prior source fitting catalog. ^b Only in blind source extraction catalog.