

FITS HEADER DESCRIPTION

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Introduction

This document is a summary of the meaning and usage of each keyword in the FITS header for the data cube we are currently working on.

Header Keywords Description

keyword	Value	Description
SIMPLE	T	Standar FITS compliance
BITPIX	-32	32-bit floating point data
NAXIS	3	Number of data axes (3D cube)
NAXIS1	25	Axis 1 length (RA or x-axis pixels)
NAXIS2	22	Axis 2 length (Dec or y-axis pixels)
NAXIS3	94	Axis 3 length (spectral/velocity channels)
BMAJ	0.0111	Beam major axis in degrees
BMIN	0.0111	Beam minor axis in degrees
BPA	0.0	Beam position angle in degrees
BTYP	Intensity	Data type (typically flux or brightness)
OBJECT	SoFiA J234703.61+292835.6	Target name
BUNIT	Jy/beam	Unit of the image data
EQUINOX	2000.0	Equinox for celestial coordinate system
RADESYS	FK5	Celestial coordinate reference frame
LONPOLE	180.0	Native longitude of celestial pole
LATPOLE	29.071	Native latitude of celestial pole
PC1 ₁ PC3 ₃	(values)	Rotation matrix elements of WCS transformation
CTYPE1	RA—TAN	Right Ascension (TAN projection)
CRVAL1	357.249192398	World coordinate at reference pixel (RA)
CDEL1	-0.001666667	RA increment per pixel (deg/pix)
CRPIX1	-248.5	Reference pixel (axis 1)
CUNIT1	deg	Units for axis 1
CTYPE2	DEC—TAN	Declination (TAN projection)
CRVAL2	29.071002088	World coordinate at reference pixel (Dec)
CDEL2	0.001666667	Dec increment per pixel (deg/pix)
CRPIX2	-205.0	Reference pixel (axis 2)

Keyword	Value	Description
CUNIT2	deg	Units for axis 2
CTYPE3	VRAD	Radial velocity axis (line-of-sight)
CRVAL3	9820483.591	Reference radial velocity (m/s)
CDELTA3	-7729.2898	Velocity increment per channel (m/s)
CRPIX3	-575.0	Reference pixel (axis 3)
CUNIT3	m/s	Units for axis 3
RESTFRQ	1.42040575177e9	Rest frequency of spectral line (Hz)
SPECSYS	BARYCENT	Spectral reference frame
ALTRVAL	1.37387665804e9	Alternate spectral coordinate (frequency)
ALTRPIX	-575.0	Alternate spectral reference pixel
VELREF	258	Velocity reference code (LSR = 1, Radio = +256)
CELLSCAL	CONSTANT	Pixel scaling is constant across the cube
DATE	2025-04-04T20:17:42.420838	File creation date

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