

VLBA in CASA FTE Analysis (gmoellen 2020May21)

	Feature (see req doc)	FTE est. (weeks)	VLBA Priority	JIVE Interest	(notes)
2	Generic				
2.1	Scan-based interpolation	3	H	*	
2.2	Respect correlation-dependent flags		M	*	(complete: 5.7/6.1)
2.3	Geometry Cal from POINTING subtable	2	M		
2.4	Support adding observing intents	2	M	*	
3	Amplitude Calibration				
3.1	Tsys				
3.1.1	Gain-constrained self-cal (ANTUSE)	2	H	*	
3.2	Opacity correction				
3.2.1	Zenith opacity	2	M		
3.2.2	Opacity derived from Tsys(za)	3	M	*	
3.2.2.1	Account for spillover	0	M		(implicit)
3.2.2.2	Elevation limits	0	M		(implicit)
3.2.2.3	Least squares and robust estimation	2	M		(+robust)
3.2.2.4	Use specified zenith opacity(t)	0	M	*	(see 3.2.1)
3.3	Antenna gain				
3.3.1	Gain curve import		H	*	(in progress: 5.8/6.2)
3.3.2	Band-dependent		H	*	(in progress: 5.8/6.2)
3.3.3	Plot gaincurve(elevation)	2	H	*	
3.3.4	Plot gaincurve(time)	2	H	*	
3.4	Decorrelation correction				
3.4.1	Store correlator averaging in MS	1	M		
3.4.2	Avoid extra pass through data	4	M		
3.4.3	Support cumulative calibration	0	M		(redundant)
3.5	Calibration editing				
3.5.1	Manually edit cal data in plots	0	H	*	(see 5.1.2)
4	Pulse Cal				
4.1	Data Structure				
4.1.1	Import of PCAL data	3	M		
4.1.2	Support up to B+1 PCAL tones	0	M		(implicit)
4.1.3	Support PCAL at data cadence	0	L		(implicit)
4.1.4	Support PCAL time-averaging	2	L		
4.1.5	Support "cable-cal"	0	M		(implicit)
4.1.6	Antenna-dependent cadence/tones	0	M		(implicit)
4.1.7	Adequate precision	0	M		(implicit)
4.2	PCAL Data Selection				
4.2.1	Plot PCAL amp/phase/cc vs. time	3	M		
4.2.2	Raster image view	3	M		
4.1.3	PCAL flagging support (auto/manual)	3	M		
4.3	PCAL Calculations				
4.3.1	Delay(t)	4	M		
4.3.1.1	Per antenna and per spw		M		
4.3.1.2	MBD over spws/subbands		M		
4.3.2	Include cable cal	1	M		
4.3.3	Store in a caltable	0	M		(implicit in 4.3.1)
4.3.4	Support PCAL time-average	0	L		(see 4.1.4)
4.3.5	Solve for bandpass from PCALs	2	L		
4.3.6	Solve for gain(t) from PCAL amp/phases	2	M		
4.3.7	Manage ambiguities using vis data	3	M		
5	Fringe-fitting				
5.1	General				
5.1.1	Support cross-hand delay & phase	3	H	*	
5.1.1.1	Support dispersive term		H	*	(complete: 5.7/6.1)
5.1.1.2	Support solve term selection		H	*	(complete: 5.7/6.1)
5.1.2	Support fringe-fit solutions in plotms	8	H	*	
5.2	Mode of Operation				

5.2.1	Overlapping solution intervals	4	H	*	
5.2.2	Shifted solution intervals to fit valid data	3	M	*	
5.2.3	Per-antenna delay/rate search windows	2	M		
5.2.4	Support fringe-fit solution smoothing	3	M	*	
5.2.4.1	Smooth solution terms independently	0	M		(implicit)
5.2.5	Support pre-solve data combine on corr axis	2	H	*	
5.2.6	Alternate weights	2	M	*	
5.2.7	Baseline stacking	4	M		
5.2.8	MBD		M	*	(in progress: 5.8/6.2)
5.2.9	Support heterogeneous spw combine	5	M	*	
5.2.10	Support fringe-rate mapping	6	L	*	
6	Polarization				
6.1	Polarization calibration				
6.1.1	Leakage cal solve from resolved calibrators	5	H	*	
6.1.2	Co-parallactic angle for X-Y mounts	2	L	*	
6.2	Calibration				
6.2.1	Support delay transfer across polarizations	3	M		
6.2.1.1	Support fringe detection assist from other correlations	0	M		(implicit)
6.2.1.2	...including time-dependence	0	M		(implicit)
7	Model accountability				
7.1	Delay model propagation	12	M	*	requires substantial design
7.1.1	Store incremental delay model with data	0	M	*	
7.1.2	Support delay model versioning	0	M		
7.1.3	Support delay resolution at 1fs	0	M		
7.1.4	Maintain delay effect partitioning	0	M		
7.1.5	Support delay polynomial spline	0	M		
7.1.6	Import correlator delay model	0	M	*	
7.1.7	Update delay model by delay calibration	0	M	*	
7.1.8	Delay model export to derived datasets	0	M	*	
7.2	Delay model adjustments				
7.2.1	EOP update/calibration		M	*	(in progress: 5.8/6.2)
7.2.2	EOP update import	2	M		
7.2.3	Support phase center adjustment	4	M		
7.2.3.1	Support J2000 coords	0	L		(implicit)
7.2.3.2	New phase equivalent to as-if-correlated	0	L		(implicit)
7.2.3.3	Update MS coordinates	0	L		(implicit)
7.2.3.4	Update UVW	0	L		(implicit)
7.2.3.5	Support <=1 arcmin shifts	0	L	*	(implicit)
7.3	Delay model replacement				
7.3.1	Derive of delay correction from external delay model	2	M	*	
8	Miscellaneous				
8.1	Ionospheric Correction				
8.1.1	Support dispersive delay correction from external TEC data	4	M	*	
8.1.2	Support IONEX format (cf AIPS TECOR)	0	M	*	(implicit)
TOTALS:					
	N(VLBA=H)		14		
	N(VLBA=M)		53		
	N(VLBA=L)		11		
	N(JIVE=*)			35	
	FTE(VLBA=H)	31			
	FTE(VLBA=M)	84			
	FTE(VLBA=H+M)	115			
	FTE(VLBA=L)	12			
	FTE(NRAO+JIVE [50/50])	75			<i>Not isolated JIVE effort!</i>
	FTE(TOTAL)	127			
	<i>Required isolated NRAO effort</i>	89.5			Assuming ~50% JIVE contribution to mutual items