

ML005 Correlation Report

General information

- A part of [C181C](#)
- Targets: M87, 3C273, 3C279
- Session info: <http://www3.mpifr-bonn.mpg.de/div/vlbi/globalmm/>
- Station feedback: http://www3.mpifr-bonn.mpg.de/div/vlbi/globalmm/sessions/apr18/feedback_apr18.asc
- GBT calibration info (Tsys files for download) and other related information for this session can be found here: <https://safe.nrao.edu/wiki/bin/view/GB/Observing/WbandVLBACal/C181>
- *Special processing* was applied to all data in order to correlate mismatching frequency setups of ALMA and other GMVA stations. See details [here](#).

Current Status

Correlation finished, data **released** on 10/12/2018.

A **second** data release, with a problem, spotted in the original release, corrected, was made on 31/01/2019.

A **third** data release, rerunning PolConvert with the latest (25.06.2019) ALMA QA2 release, was made on 26/09/2019.

Fringes

| Station | Code | Fringes | Plots | Comments |
|---------|------|---------|--|---|
| Ef | B | yes | <p>Fringe overview of all baselines (all of C181C) including Ef in LL (left for each baseline) and RR (right for each baseline). Legend: white - scheduled, but no data, blue - no fringe, red-green - fringes of different quality. D -- fourfit error, in this case due to mixing upper and lower subbands in the KVN compatibility mode, no real problem with the data.</p> <p>Scans 30, 33, 77-78, 80, 82-83, 92 are missing from all diagnostic plots due to a difx2mark4 error. They are present in the final correlation products.</p> <p>c181c FRINGE RfAnt Ef LLRR AllSrc.pdf</p> <p>Examples of fourfit fringe plots:</p> <p>c181c No0075 3C279 AB LL.pdf, c181c No0075 3C279 AB LR.pdf, c181c No0075 3C279 AB RL.pdf, c181c No0075 3C279 AB RR.pdf</p> <p>Same for all antennas below unless otherwise noted.</p> | <p>in the plots Ef is "missing" all the baselines except to ALMA, GLT and KVN. This is due to a fourfit error, the baselines are missing only from some of the diagnostic plots, but are present in the final correlation products.</p> |
| On | X | yes | <p>c181c FRINGE RfAnt On LLRR AllSrc.pdf</p> <p>c181c No0075 3C279 AX LL.pdf, c181c No0075 3C279 AX LR.pdf, c181c No0075 3C279 AX RL.pdf, c181c No0075 3C279 AX RR.pdf</p> | <p>in the plots On is "missing" all the baselines except to ALMA, GLT and KVN. This is due to a fourfit</p> |

| Station | Code | Fringes | Plots | Comments |
|---------|------|---------|---|--|
| | | | | error, the baselines are missing only from some of the diagnostic plots, but are present in the final correlation products. |
| Ys | Y | yes | c181c_FRINGE_RfAnt_Ys_LLRR_AllSrc.pdf c181c_No0075_3C279_AY_LL.pdf , c181c_No0075_3C279_AY_LR.pdf , c181c_No0075_3C279_AY_RL.pdf , c181c_No0075_3C279_AY_RR.pdf | <p>As usual, Ys observed LCP only, but it was also recorded as fake RCP, that's why there are common Ys "right" to other antenna's left fringes.</p> <p>in the plots Ys is "missing" all the baselines except to ALMA, GLT and KVN. This is due to a fourfit error, the baselines are missing only from some of the diagnostic plots, but are present in the final correlation products.</p> |
| Mh | Z | yes | c181c_FRINGE_RfAnt_Mh_LLRR_AllSrc.pdf | in the plots Mh is "missing" all the baselines |

| Station | Code | Fringes | Plots | Comments |
|-------------|------|---------|--|--|
| | | | <p data-bbox="430 390 1040 453">c181c No0071 3C273 AZ LL.pdf, c181c No0071 3C273 AZ LR.pdf, c181c No0071 3C273 AZ RL.pdf, c181c No0071 3C273 AZ RR.pdf</p> | <p data-bbox="1399 176 1544 695">except to ALMA, GLT and KVN. This is due to a fourfit error, the baselines are missing only from some of the diagnostic plots, but are present in the final correlation products.</p> |
| Pv | P | yes | <p data-bbox="430 930 818 953">c181c FRINGE RfAnt Pv LLRR AllSrc.pdf</p> <p data-bbox="430 995 1040 1058">c181c No0084 3C273 AP LL.pdf, c181c No0084 3C273 AP LR.pdf, c181c No0084 3C273 AP RL.pdf, c181c No0084 3C273 AP RR.pdf</p> <p data-bbox="430 1100 1040 1163">c181c No0084 3C273 gP LL.pdf, c181c No0084 3C273 gP LR.pdf, c181c No0084 3C273 gP RL.pdf, c181c No0084 3C273 gP RR.pdf</p> | <p data-bbox="1399 743 1544 1377">in the plots Pv is "missing" all the baselines except to ALMA, GLT and KVN. This is due to a fourfit error, the baselines are missing only from some of the diagnostic plots, but are present in the final correlation products.</p> |
| VLBA: Br | b | yes | <p data-bbox="430 1461 818 1484">c181c FRINGE RfAnt Br LLRR AllSrc.pdf</p> <p data-bbox="430 1526 1032 1589">c181c No0075 3C279 Af LL.pdf, c181c No0075 3C279 Af LR.pdf, c181c No0075 3C279 Af RL.pdf, c181c No0075 3C279 Af RR.pdf</p> <p data-bbox="430 1631 1040 1694">c181c No0084 3C273 Ab LL.pdf, c181c No0084 3C273 Ab LR.pdf, c181c No0084 3C273 Ab RL.pdf, c181c No0084 3C273 Ab RR.pdf</p> | <p data-bbox="1399 1428 1544 1759">Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products.</p> |
| VLBA: Fd | f | yes | <p data-bbox="430 1808 818 1831">c181c FRINGE RfAnt Fd LLRR AllSrc.pdf</p> <p data-bbox="430 1873 1032 1936">c181c No0075 3C279 Af LL.pdf, c181c No0075 3C279 Af LR.pdf, c181c No0075 3C279 Af RL.pdf, c181c No0075 3C279 Af RR.pdf</p> | <p data-bbox="1399 1814 1544 1955">Baselines to EVN stations are "missing" due to a fourfit</p> |

| Station | Code | Fringes | Plots | Comments |
|-------------|------|---------|---|--|
| | | | | error. They are present in the final correlation products. |
| VLBA: Kp | k | yes | c181c FRINGE RfAnt Kp LLRR AllSrc.pdf c181c No0075 3C279 Ak LL.pdf , c181c No0075 3C279 Ak LR.pdf , c181c No0075 3C279 Ak RL.pdf , c181c No0075 3C279 Ak RR.pdf | Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products. |
| VLBA: La | l | yes | c181c FRINGE RfAnt La LLRR AllSrc.pdf c181c No0075 3C279 Al LL.pdf , c181c No0075 3C279 Al LR.pdf , c181c No0075 3C279 Al RL.pdf , c181c No0075 3C279 Al RR.pdf | Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products. |
| VLBA: Mk | m | yes | c181c FRINGE RfAnt Mk LLRR AllSrc.pdf c181c No0103 3C279 Am LL.pdf , c181c No0103 3C279 Am LR.pdf , c181c No0103 3C279 Am RL.pdf , c181c No0103 3C279 Am RR.pdf | <p>Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products.</p> <p>Taken out for several scans because of USNO observing.</p> |
| VLBA: Nl | n | yes | c181c FRINGE RfAnt Nl LLRR AllSrc.pdf c181c No0075 3C279 An LL.pdf , c181c No0075 3C279 An LR.pdf , c181c No0075 3C279 An RL.pdf , c181c No0075 3C279 An RR.pdf | Baselines to EVN stations are "missing" due to a fourfit |

| Station | Code | Fringes | Plots | Comments |
|-------------|------|---------|---|--|
| | | | | error. They are present in the final correlation products. |
| VLBA: Ov | o | yes | c181c FRINGE RfAnt Ov LLRR AllSrc.pdf c181c No0103 3C279 Ao LL.pdf , c181c No0103 3C279 Ao LR.pdf , c181c No0103 3C279 Ao RL.pdf , c181c No0103 3C279 Ao RR.pdf | Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products. |
| VLBA: Pt | p | yes | c181c FRINGE RfAnt Pt LLRR AllSrc.pdf c181c No0075 3C279 Ap LL.pdf , c181c No0075 3C279 Ap LR.pdf , c181c No0075 3C279 Ap RL.pdf , c181c No0075 3C279 Ap RR.pdf | <p>Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products.</p> <p>Taken out for several scans because of USNO observing.</p> |
| GBT: Gb | G | yes | c181c FRINGE RfAnt Gb LLRR AllSrc.pdf c181c No0075 3C279 AG LL.pdf , c181c No0075 3C279 AG LR.pdf , c181c No0075 3C279 AG RL.pdf , c181c No0075 3C279 AG RR.pdf | Baselines to EVN stations are "missing" due to a fourfit error. They are present in the final correlation products. |
| GLT: Gl | g | yes | c181c FRINGE RfAnt Gl LLRR AllSrc.pdf c181c No0071 3C273 Ag LL.pdf , c181c No0071 3C273 Ag LR.pdf , c181c No0071 3C273 Ag RL.pdf , c181c No0071 3C273 Ag RR.pdf | Data analysis has shown that GLT recorded |

| Station | Code | Fringes | Plots | Comments |
|-------------|------|------------|--|--|
| | | | <p>c181c No0084 3C273_gP_LL.pdf, c181c No0084 3C273_gP_LR.pdf, c181c No0084 3C273_gP_RL.pdf, c181c No0084 3C273_gP_RR.pdf</p> | <p>in unknown polarization instead of circular (most probably unknown elliptic). At this moment IT SHOULD NOT BE USED FOR ANY POLARIMETRY and in general dealt with very carefully.</p> |
| ALMA: Aa | A | yes | <p>c181c FRINGE RfAnt Aa LLRR AllSrc.pdf</p> <p>c181c No0071 3C273_Ag_LL.pdf, c181c No0071 3C273_Ag_LR.pdf, c181c No0071 3C273_Ag_RL.pdf, c181c No0071 3C273_Ag_RR.pdf</p> <p>c181c No0071 3C273_AZ_LL.pdf, c181c No0071 3C273_AZ_LR.pdf, c181c No0071 3C273_AZ_RL.pdf, c181c No0071 3C273_AZ_RR.pdf</p> <p>c181c No0075 3C279_AB_LL.pdf, c181c No0075 3C279_AB_LR.pdf, c181c No0075 3C279_AB_RL.pdf, c181c No0075 3C279_AB_RR.pdf</p> <p>c181c No0075 3C279_Af_LL.pdf, c181c No0075 3C279_Af_LR.pdf, c181c No0075 3C279_Af_RL.pdf, c181c No0075 3C279_Af_RR.pdf</p> <p>c181c No0075 3C279_AG_LL.pdf, c181c No0075 3C279_AG_LR.pdf, c181c No0075 3C279_AG_RL.pdf, c181c No0075 3C279_AG_RR.pdf</p> <p>c181c No0075 3C279_Ak_LL.pdf, c181c No0075 3C279_Ak_LR.pdf, c181c No0075 3C279_Ak_RL.pdf, c181c No0075 3C279_Ak_RR.pdf</p> <p>c181c No0075 3C279_Al_LL.pdf, c181c No0075 3C279_Al_LR.pdf, c181c No0075 3C279_Al_RL.pdf, c181c No0075 3C279_Al_RR.pdf</p> <p>c181c No0075 3C279_An_LL.pdf, c181c No0075 3C279_An_LR.pdf, c181c No0075 3C279_An_RL.pdf, c181c No0075 3C279_An_RR.pdf</p> <p>c181c No0075 3C279_Ap_LL.pdf, c181c No0075 3C279_Ap_LR.pdf, c181c No0075 3C279_Ap_RL.pdf, c181c No0075 3C279_Ap_RR.pdf</p> <p>c181c No0075 3C279_AX_LL.pdf, c181c No0075 3C279_AX_LR.pdf, c181c No0075 3C279_AX_RL.pdf, c181c No0075 3C279_AX_RR.pdf</p> | <p>Observed in linear polarization, converted to circular polarization in post-correlation using PolConvert. For technical reasons the atmospheric correction was applied twice -- both in original ALMA data and during the correlation. Although a special procedure was developed to compensate for this, we found that its application leads to other difficulties, in</p> |

| Station | Code | Fringes | Plots | Comments |
|------------|------|---------|--|---|
| | | | c181c No0075 3C279 AY LL.pdf , c181c No0075 3C279 AY LR.pdf , c181c No0075 3C279 AY RL.pdf , c181c No0075 3C279 AY RR.pdf c181c No0084 3C273 Ab LL.pdf , c181c No0084 3C273 Ab LR.pdf , c181c No0084 3C273 Ab RL.pdf , c181c No0084 3C273 Ab RR.pdf c181c No0103 3C279 Am LL.pdf , c181c No0103 3C279 Am LR.pdf , c181c No0103 3C279 Am RL.pdf , c181c No0103 3C279 Am RR.pdf c181c No0103 3C279 Ao LL.pdf , c181c No0103 3C279 Ao LR.pdf , c181c No0103 3C279 Ao RL.pdf , c181c No0103 3C279 Ao RR.pdf c181c No0084 3C273 AP LL.pdf , c181c No0084 3C273 AP LR.pdf , c181c No0084 3C273 AP RL.pdf , c181c No0084 3C273 AP RR.pdf | particular to abnormally high fringe rate jumps, so in the final production run the double atmospheric correction was left as is. |
| KVN: Kt | t | n/a | c181c FRINGE RfAnt Kt LLRR AllSrc.pdf ----- | no KVN participation in this part of c181c |
| KVN: Ku | u | n/a | c181c FRINGE RfAnt Ku LLRR AllSrc.pdf ----- | no KVN participation in this part of c181c |
| KVN: Ky | y | n/a | c181c FRINGE RfAnt Ky LLRR AllSrc.pdf ----- | no KVN participation in this part of c181c |

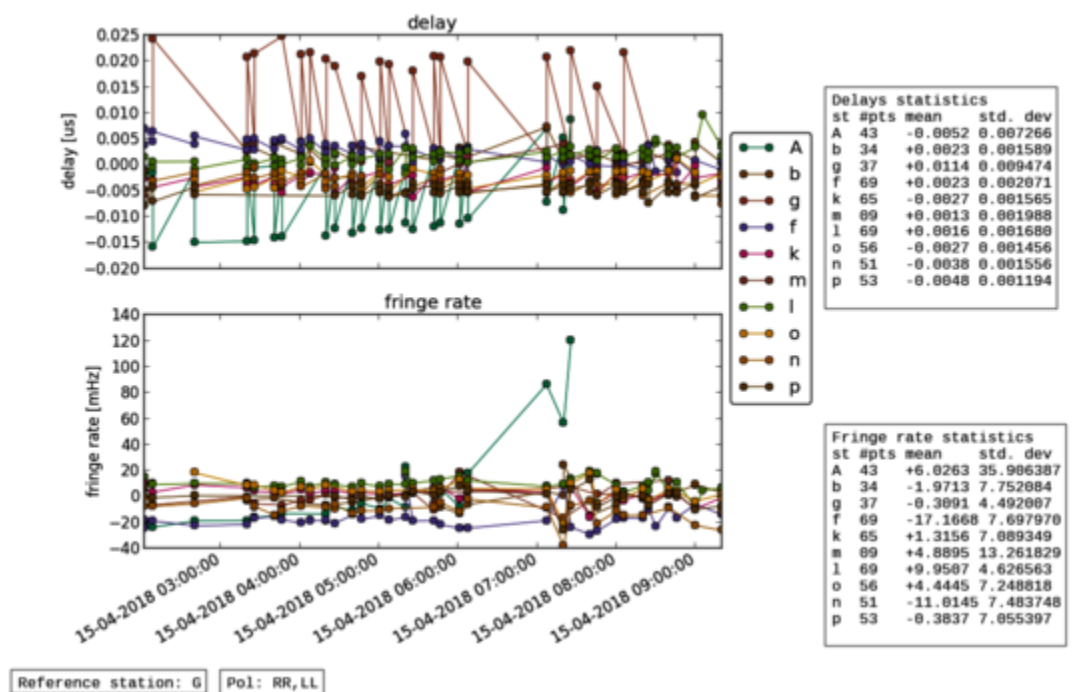
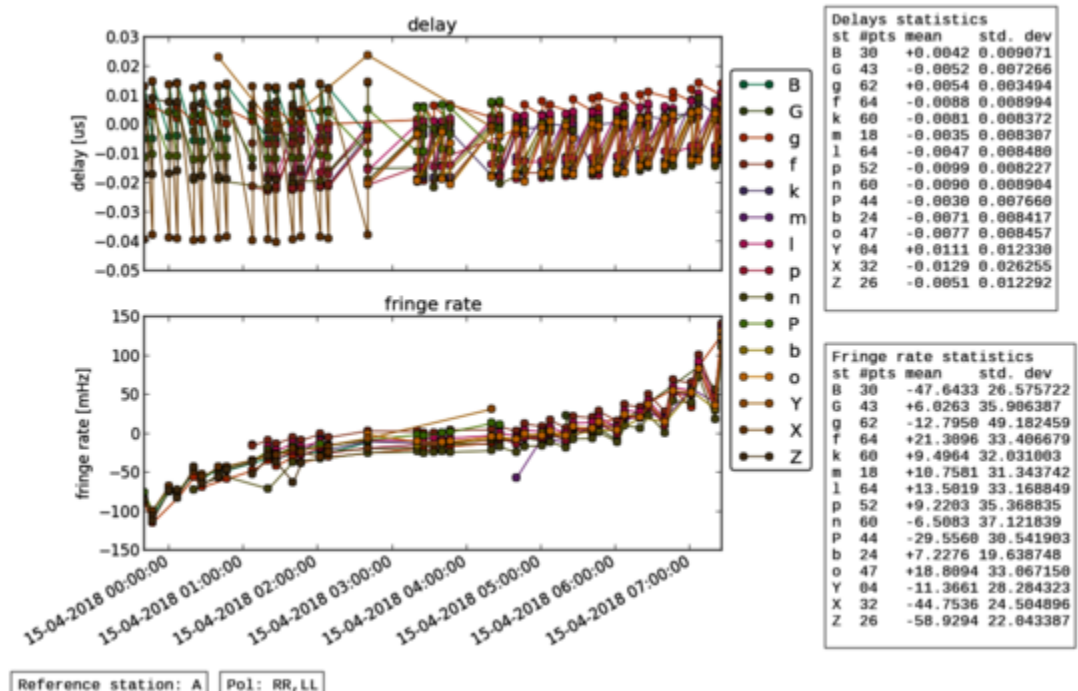
Notes

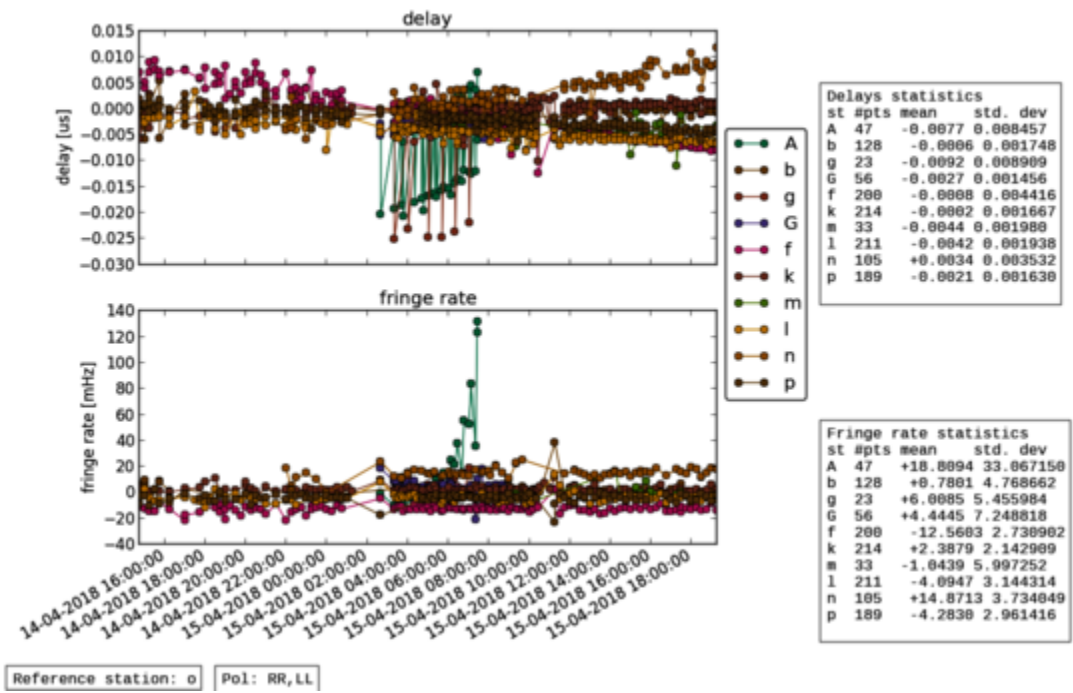
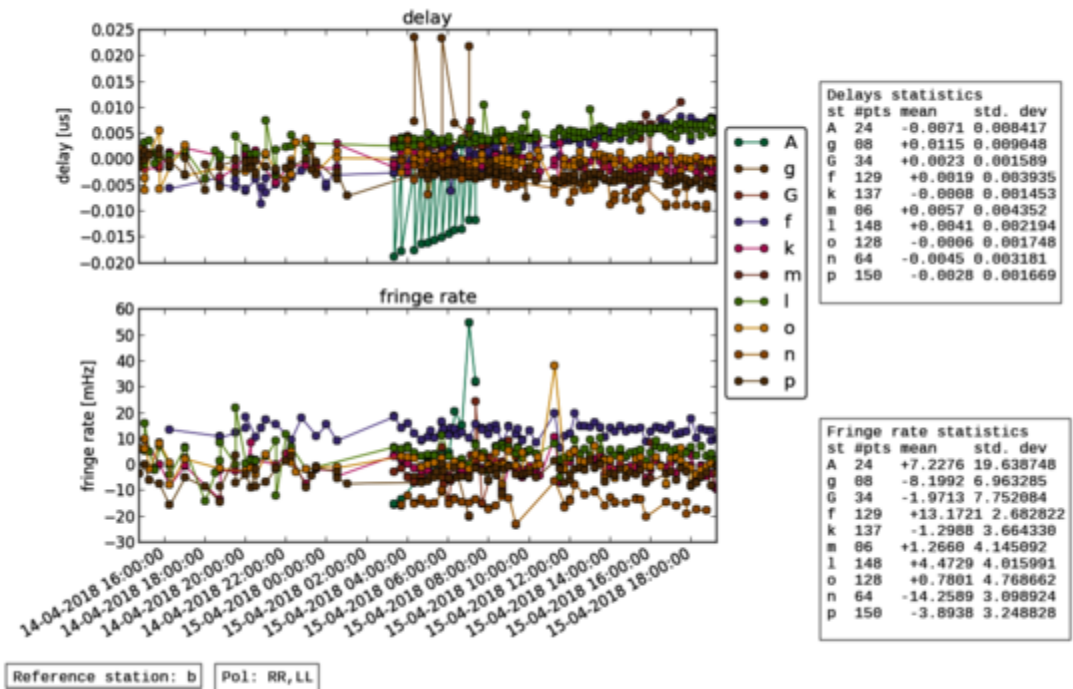
There were problems with some diagnostic plots of this experiment due to yet poorly understood errors of fourfit and other HOPS components. But this does not change the quality of the final correlation products. *(These issues were fixed in the second data release of 31/01/2019)*

GLT participated in this session for the first time as a test, and serious problems were detected when analysing its data. Be very careful when using them.

Post-Correlation checks

Residuals





FITS completeness (pclist)

legend:

- o -- station scheduled and fully accounted for in the fits file
- 42 (or another number) -- station scheduled, but data found only for 42% of the scheduled interval
- x -- station scheduled, but corresponding entry not found in the fits file
- . -- station not scheduled

mm013b_setup1.fits:

| | | | | EF | ON | PV | YS | MH | NL | FD | PT | LA | OV | KP | BR | GL | MK | AA | AA | GB | KY | KU | KT |
|--------------|--------|-------|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| c181c_035D2D | No0035 | 3C273 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_036D2D | No0036 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | . | . | . | . | . | . |
| c181c_038D2D | No0038 | 3C279 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_039D2D | No0039 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_041D2D | No0041 | 3C273 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_042D2D | No0042 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | . | . | . | . | . | . |
| c181c_044D2D | No0044 | 3C273 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_045D2D | No0045 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | . | . | . | . | . | . |
| c181c_048D2D | No0048 | 3C279 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| c181c_049D2D | No0049 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | . | . | . | . | . | . |
| c181c_051D2D | No0051 | 3C273 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_052D2D | No0052 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | 94 | 94 | . | . | . | . |
| c181c_054D2D | No0054 | 3C279 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | o | o | . | . | . | . |
| c181c_055D2D | No0055 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_058D2D | No0058 | 3C273 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_059D2D | No0059 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_061D2D | No0061 | 3C279 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | . | . | o | o | . | . | . | . |
| c181c_062D2D | No0062 | M87 | 3mm_RDBE | o | o | o | o | o | . | . | . | . | . | . | . | o | . | 94 | 94 | . | . | . | . |
| c181c_064D2D | No0064 | 3C273 | 3mm_RDBE | o | o | o | o | o | o | . | . | . | . | . | . | o | . | x | x | . | . | . | . |
| c181c_065D2D | No0065 | M87 | 3mm_RDBE | o | o | o | o | o | o | . | . | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_068D2D | No0068 | 3C273 | 3mm_RDBE | o | o | o | o | o | o | o | o | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_069D2D | No0069 | M87 | 3mm_RDBE | o | o | o | o | o | o | o | o | . | . | . | . | o | . | o | o | . | . | . | . |
| c181c_070D2D | No0071 | 3C273 | 3mm_RDBE | o | o | o | o | o | o | o | o | . | o | . | o | . | o | o | o | . | . | . | . |
| c181c_071D2D | No0072 | M87 | 3mm_RDBE | o | o | o | o | o | o | o | o | . | o | . | o | . | 94 | 94 | o | . | . | . | . |
| c181c_072D2D | No0073 | M87 | 3mm_RDBE | . | o | . | . | o | o | o | o | . | o | . | o | . | . | . | . | . | . | . | . |
| c181c_073D2D | No0075 | 3C279 | 3mm_RDBE | o | o | o | . | o | o | o | o | . | o | . | . | . | o | o | o | . | . | . | . |
| c181c_074D2D | No0076 | M87 | 3mm_RDBE | o | o | o | o | . | o | o | o | . | o | . | o | . | o | o | o | . | . | . | . |
| c181c_075D2D | No0077 | 3C273 | 3mm_RDBE | o | o | o | o | o | o | o | o | o | o | o | o | . | o | o | o | . | . | . | . |
| c181c_076D2D | No0078 | M87 | 3mm_RDBE | o | o | o | o | o | o | o | o | o | o | o | o | . | o | o | o | . | . | . | . |
| c181c_077D2D | No0079 | 3C279 | 3mm_RDBE | o | o | o | . | o | o | o | o | o | o | o | . | . | o | o | o | . | . | . | . |
| c181c_078D2D | No0080 | M87 | 3mm_RDBE | o | o | o | o | . | o | o | o | o | o | o | o | . | o | o | o | . | . | . | . |
| c181c_079D2D | No0082 | 3C273 | 3mm_RDBE | o | o | o | o | . | o | o | x | o | o | o | o | o | . | o | o | o | . | . | . |
| c181c_080D2D | No0083 | M87 | 3mm_RDBE | o | o | o | o | . | o | o | x | o | o | o | o | o | . | o | o | o | . | . | . |
| c181c_081D2D | No0084 | 3C273 | 3mm_RDBE | o | . | o | o | . | o | o | x | o | o | o | o | o | . | o | o | o | . | . | . |
| c181c_082D2D | No0085 | M87 | 3mm_RDBE | o | . | o | o | . | o | o | x | o | o | o | o | o | . | o | o | o | . | . | . |
| c181c_083D2D | No0086 | M87 | 3mm_RDBE | . | . | . | o | . | o | o | x | o | o | o | o | o | . | o | o | . | . | . | . |
| c181c_084D2D | No0088 | 3C279 | 3mm_RDBE | . | . | o | o | . | o | o | x | o | o | o | o | . | . | o | o | o | . | . | . |
| c181c_085D2D | No0089 | M87 | 3mm_RDBE | . | . | o | o | . | o | o | x | o | o | o | o | o | . | o | o | o | . | . | . |
| c181c_086D2D | No0091 | 3C273 | 3mm_RDBE | . | . | o | o | . | o | o | x | o | o | o | o | o | x | 91 | 91 | o | . | . | . |
| c181c_087D2D | No0092 | M87 | 3mm_RDBE | . | . | o | o | . | o | o | x | o | o | o | o | o | x | x | x | o | . | . | . |
| c181c_088D2D | No0093 | 3C273 | 3mm_RDBE | . | . | o | o | . | o | o | x | o | o | o | o | o | x | o | o | o | . | . | . |
| c181c_089D2D | No0094 | M87 | 3mm_RDBE | . | . | o | o | . | o | o | 16 | o | o | o | o | o | 16 | o | o | o | . | . | . |
| c181c_090D2D | No0095 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | o | o | o | . | . | . |
| c181c_091D2D | No0096 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | 93 | 93 | o | . | . | . | . |
| c181c_093D2D | No0099 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | 91 | 91 | o | . | . | . | . |
| c181c_094D2D | No0100 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | . | . | . | . |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--------|-------|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|---|---|---|---|
| c181c_097D2D | No0103 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | o | o | o | . | . | . | | | | |
| c181c_098D2D | No0104 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_100D2D | No0107 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_101D2D | No0108 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_103D2D | No0111 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | o | o | o | . | . | . | | | | |
| c181c_104D2D | No0112 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_107D2D | No0115 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_108D2D | No0116 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | | | |
| c181c_110D2D | No0118 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | o | o | o | . | . | . | | | | |
| c181c_111D2D | No0119 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | 94 | 94 | o | . | . | . |
| c181c_113D2D | No0122 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | . | . | . |
| c181c_114D2D | No0123 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | 94 | 94 | o | . | . | . |
| c181c_117D2D | No0126 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | o | o | o | . | . | . | . | . | . | . |
| c181c_118D2D | No0127 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | o | o | o | o | o | . | . | . | . | . | . |
| c181c_120D2D | No0130 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_121D2D | No0131 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | . | . | o | . | . | . | . | . | . | . | . |
| c181c_123D2D | No0134 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_124D2D | No0135 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | . | . | o | . | . | . | . | . | . | . | . |
| c181c_127D2D | No0138 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_129D2D | No0139 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | . | . | o | . | . | . | . | . | . | . | . |
| c181c_131D2D | No0142 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_132D2D | No0143 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | . | . | o | . | . | . | . | . | . | . | . |
| c181c_134D2D | No0145 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_135D2D | No0146 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | o | . | . | o | . | . | . | . | . | . | . | . |
| c181c_138D2D | No0149 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | o | . | . | . | . | . | . | . |
| c181c_139D2D | No0150 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_141D2D | No0152 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_142D2D | No0153 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_143D2D | No0154 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_145D2D | No0156 | 3C279 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_146D2D | No0157 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_147D2D | No0158 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_150D2D | No0161 | 3C273 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_151D2D | No0162 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |
| c181c_152D2D | No0163 | M87 | 3mm_RDBE | . | . | . | . | . | o | o | o | o | o | o | o | . | o | . | . | . | . | . | . | . | . | . | . |