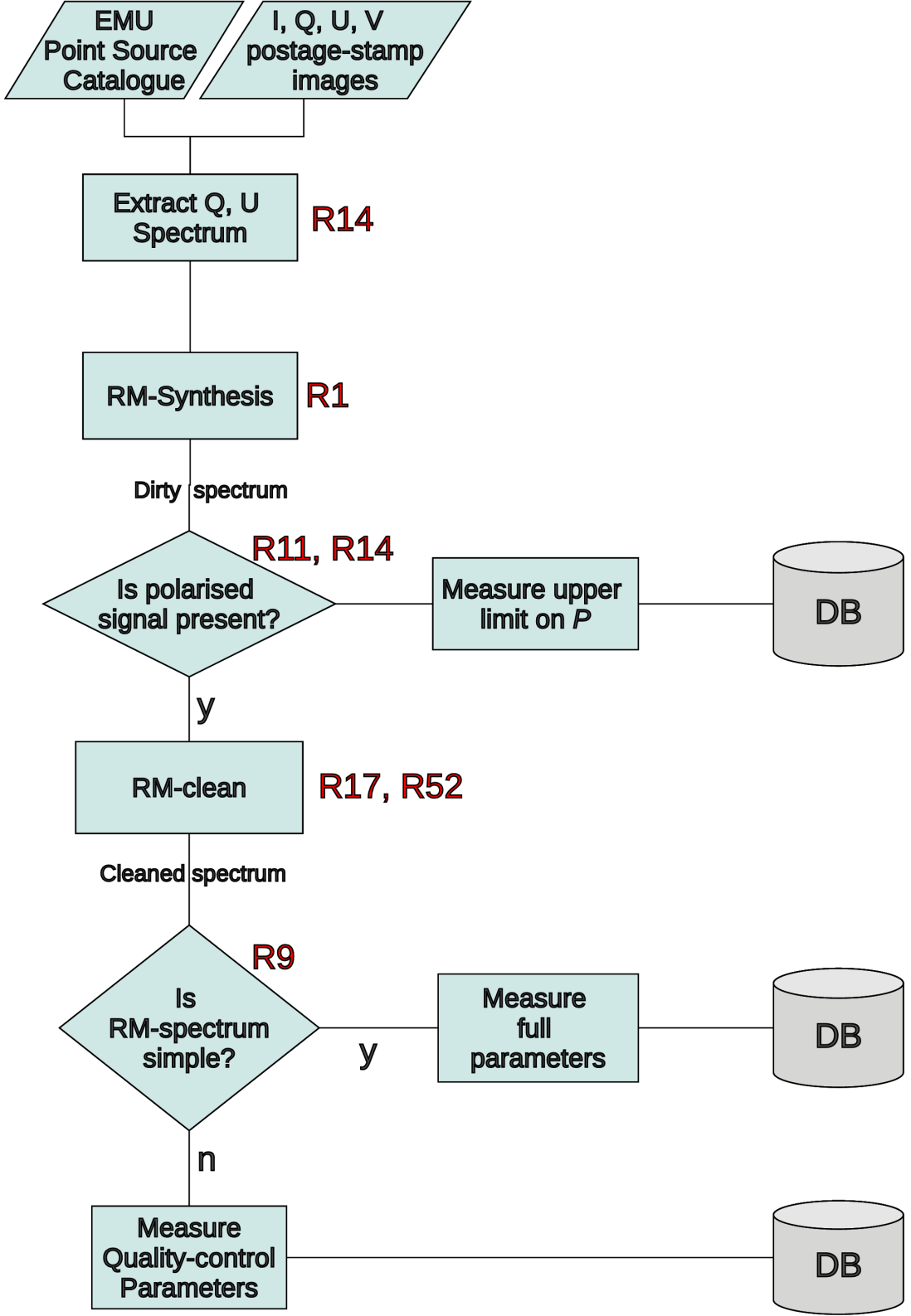
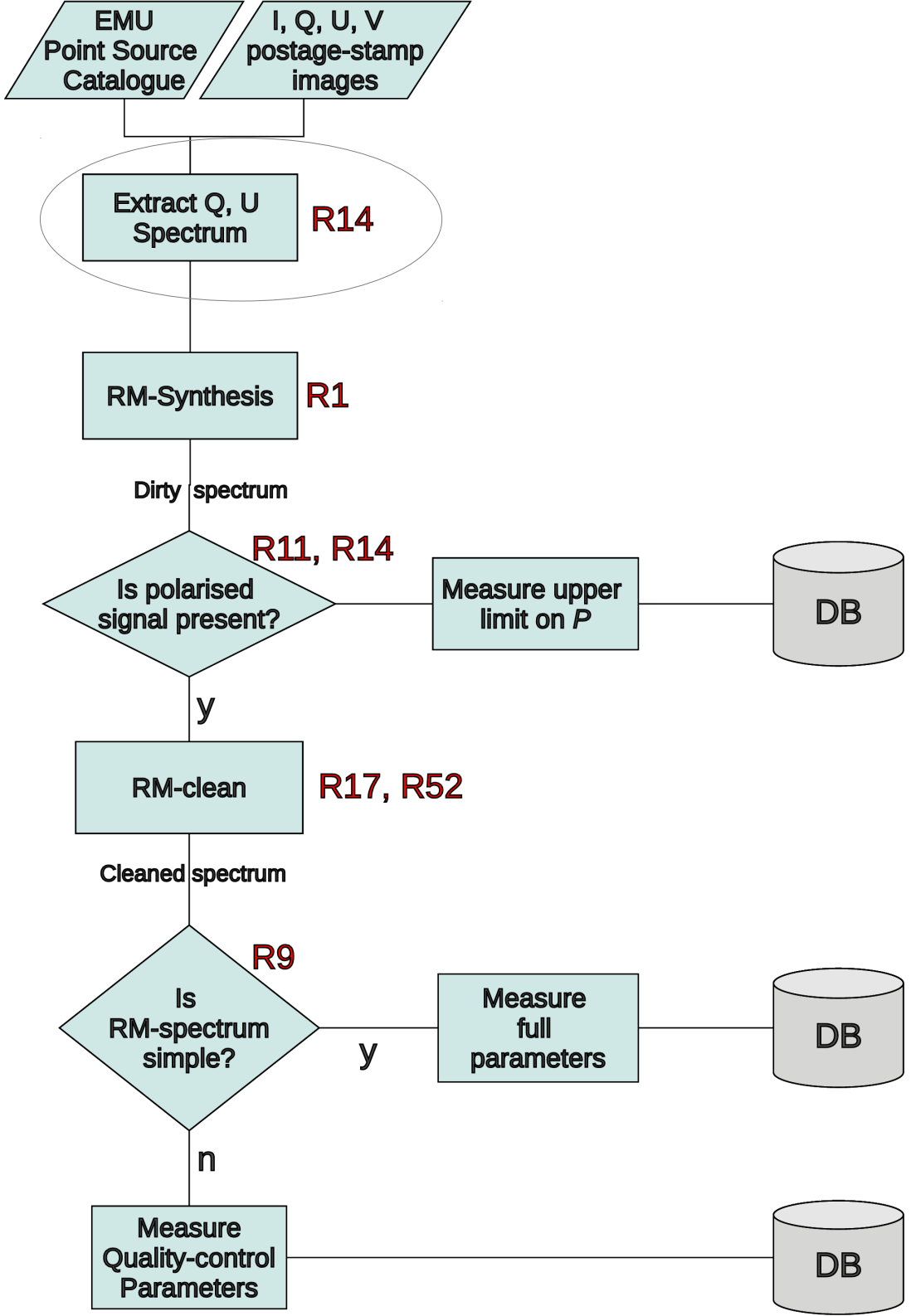
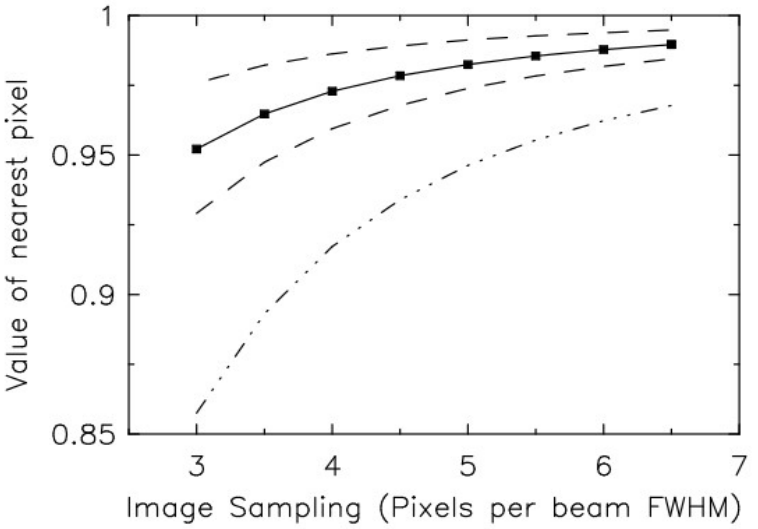

EMU Point Source Catalogue
I, Q, U, V postage-stamp images
Extract Q, U Spectrum
R14
RM-Synthesis
R1
Dirty spectrum
R11, R14
Is polarised signal present?
Measure upper limit on P
DB
y
RM-clean
R17, R52
Cleaned spectrum
R9
Is RM-spectrum simple?
y
Measure full parameters
DB
n
Measure Quality-control Parameters
DB





$$S_{N\times N} = \sum_{l=-M}^{M} \sum_{m=-M}^{M} I_{l,m},$$

$$P = f_{N\times N} S_{N\times N}.$$

$$f_{N\times N} = \left(\sum_{l=-M}^{M} \sum_{m=-M}^{M} \exp\left[-\frac{l^2+m^2}{2\sigma^2} \right] \right)^{-1},$$

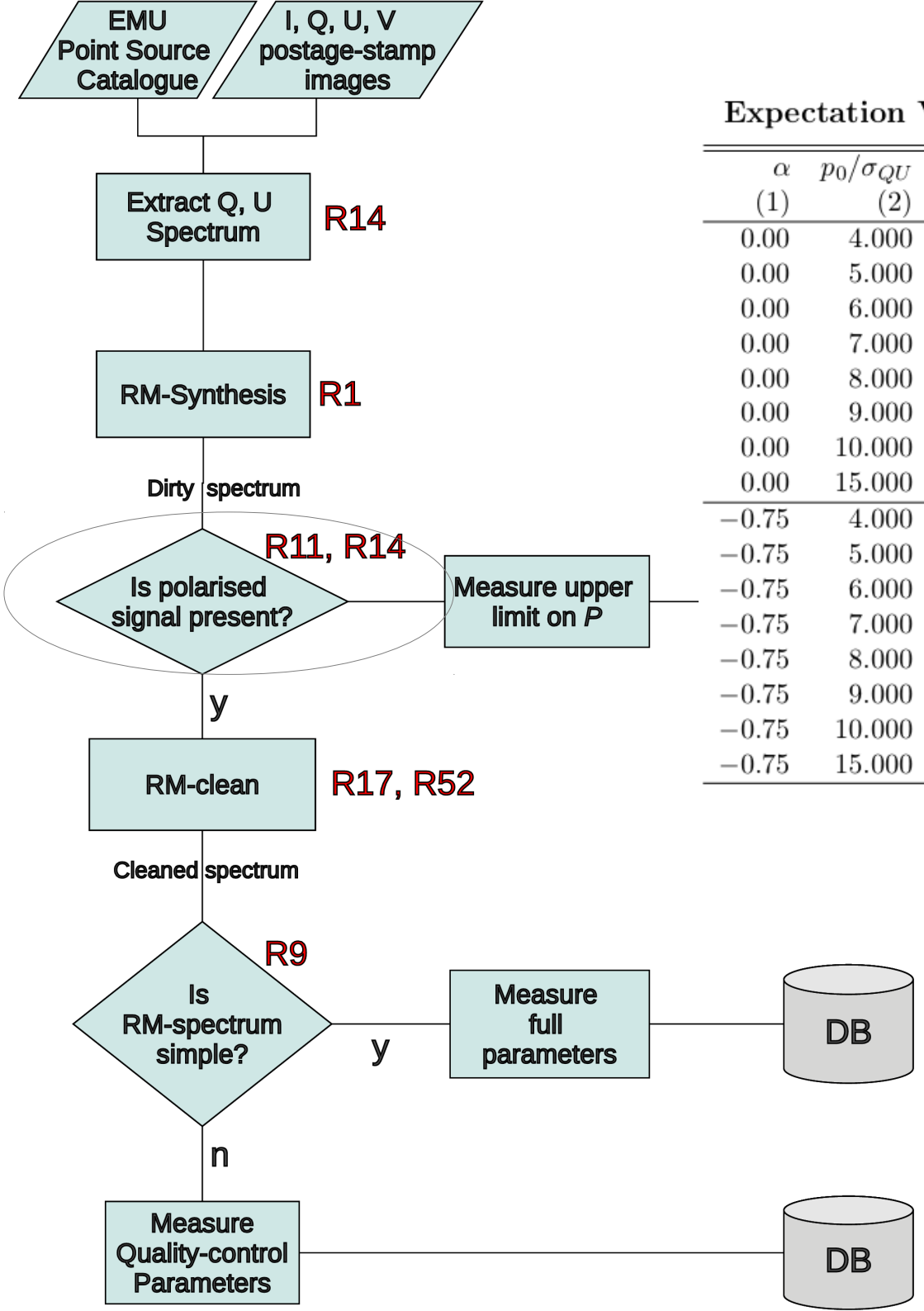
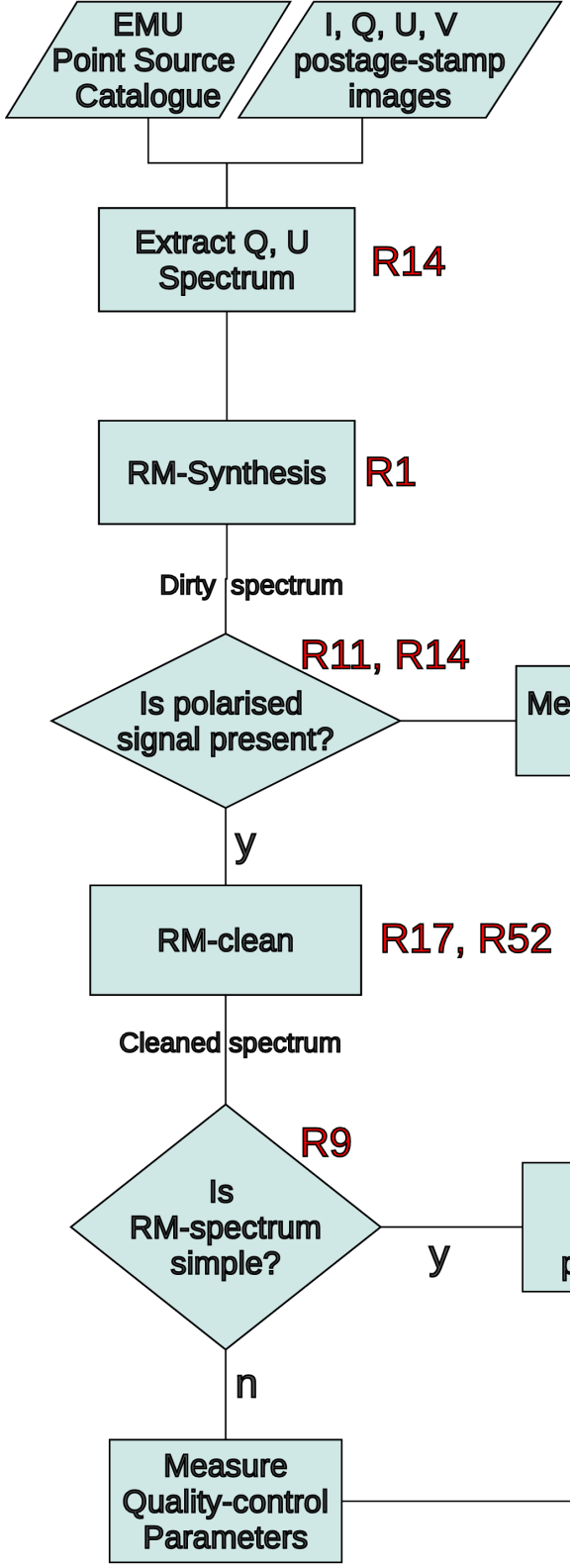
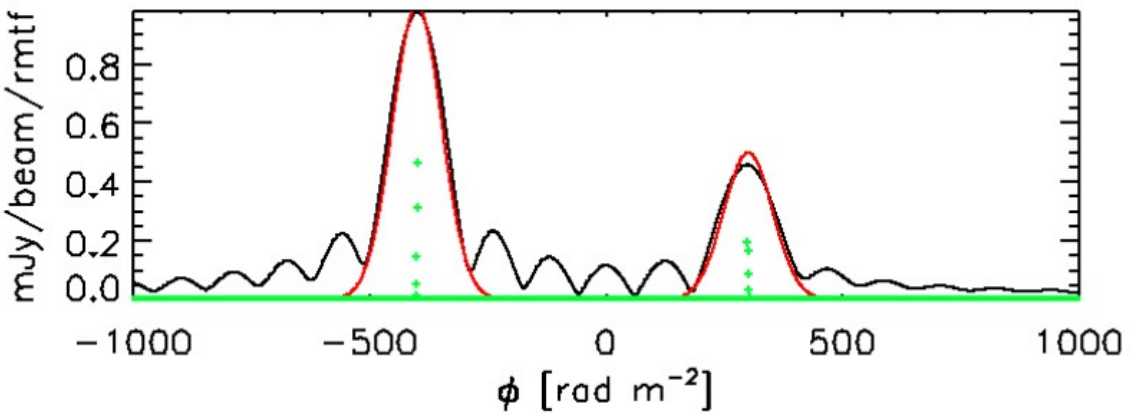


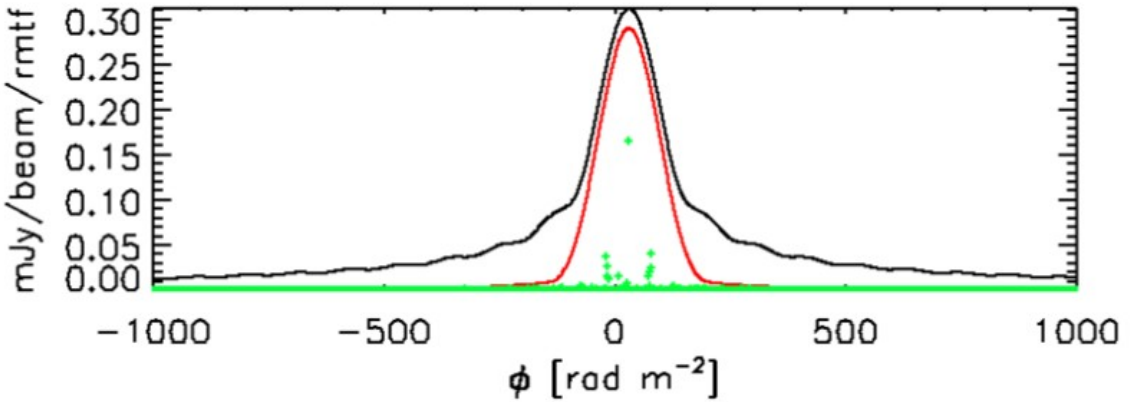
Table 2
Expectation Values of Polarized Intensity and Bias Correction

α (1)	p_0/σ_{QU} (2)	$p_{0,eff}/\sigma_{QU}$ (3)	p_{RM_0}/σ_{QU} (4)	p_{max}/σ_{QU} (5)	$\hat{p}_{RM_0}/\sigma_{QU}$ (6)	$\hat{p}_0/\sigma_{QU}$ (7)
0.00	4.000	4.000	4.139	4.384	4.020	4.114
0.00	5.000	5.000	5.106	5.237	5.009	5.012
0.00	6.000	6.000	6.092	6.188	6.011	5.999
0.00	7.000	7.000	7.076	7.156	7.006	6.994
0.00	8.000	8.000	8.072	8.142	8.011	8.000
0.00	9.000	9.000	9.070	9.130	9.015	9.004
0.00	10.000	10.000	10.053	10.107	10.003	9.993
0.00	15.000	15.000	15.027	15.063	14.994	14.986
−0.75	4.000	4.110	4.246	4.467	4.130	4.202
−0.75	5.000	5.138	5.244	5.365	5.150	5.147
−0.75	6.000	6.165	6.255	6.345	6.175	6.161
−0.75	7.000	7.193	7.272	7.347	7.204	7.188
−0.75	8.000	8.221	8.288	8.353	8.227	8.215
−0.75	9.000	9.248	9.305	9.362	9.251	9.238
−0.75	10.000	10.276	10.332	10.383	10.284	10.272
−0.75	15.000	15.413	15.444	15.478	15.412	15.403

$$\hat{p}_0 = \sqrt{p_{max}^2 - 2.3\sigma_{QU}^2},$$







$$\Delta\phi_M = K^{-1} \sum_{i=1}^{N_{RM}} (\phi_i - <\phi>)^2 \sqrt{Re_M(\phi_i)^2 + Im_M(\phi_i)^2}$$

where the normalization, K, is given by

$$K = \sum_{j=0}^{N_{RM}} \sqrt{Re_M(\phi_i)^2 + Im_M(\phi_i)^2}$$

and $<\phi>$ is the first moment given by

$$<\phi> = K^{-1} \sum_{i=1}^{N_{RM}} \phi_i \sqrt{Re_M(\phi_i)^2 + Im_M(\phi_i)^2}$$

Questions:

Should we now be considering Faraday Synthesis? Is this possible as it requires a separate imaging pipeline?

Currently writing an end-to-end pipeline written in Python and interfacing with a MySQL database. Is this suitable for transfer to the ASKAPsoft team?

Algorithims & Modules in well-commented procedures (based on Tim Robishaw's work).

Storage of measured parameters in a MySQL database (table definitions)

Storage of extracted parameters (Q, U & RM spectra) in FITS files

Interface with EMU:

How do we deal with multi-component sources? Do we just accept point sources?