Top W Helicity Measurement (lepton p_T method) Update

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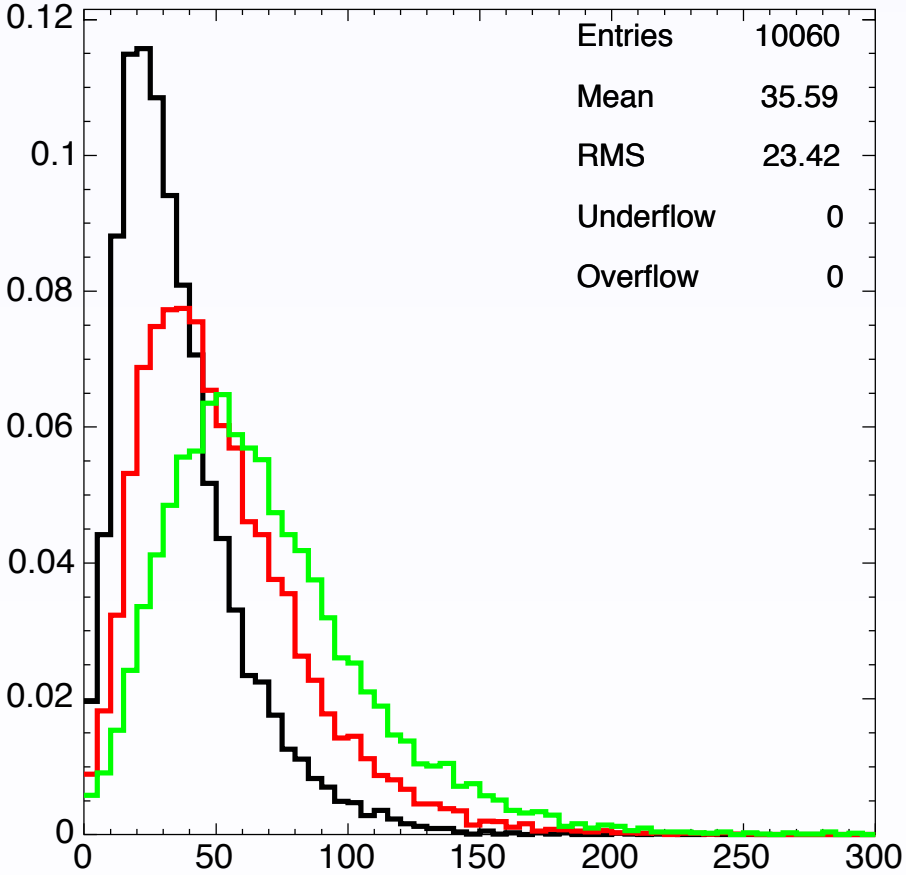
agenda

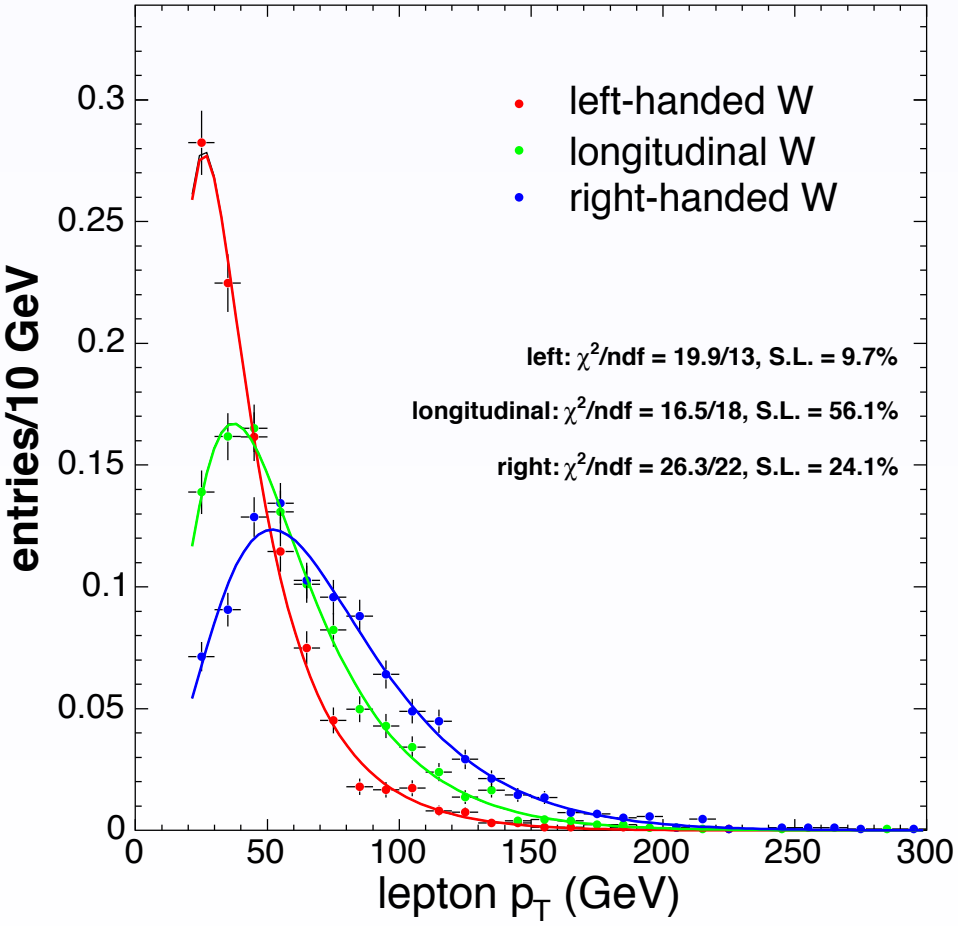
- the move from the lepton+track to the dilepton sample
- a qualitative discussion of dilepton and lepton+jets data
- PDFs, acceptances and trigger effects
- schedule

lepton+track $\not{E}_T$ cut



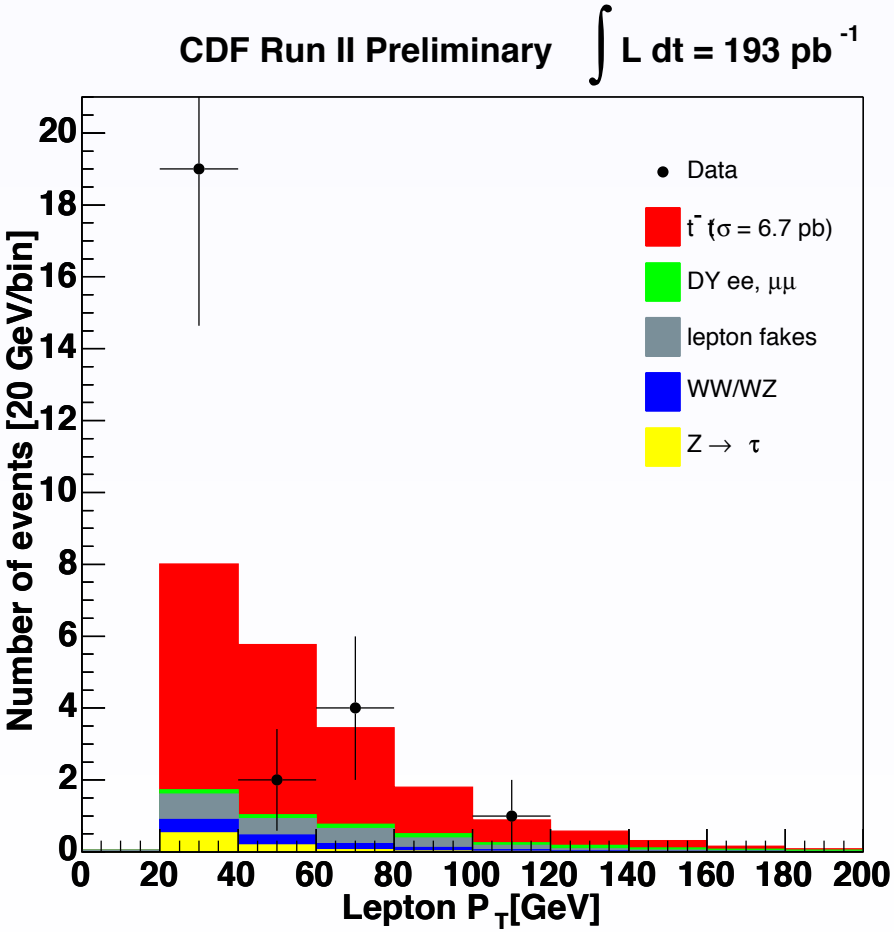
- left: Generator-level lepton p_T from $t\bar{t} \to \ell\ell\nu\nu bb$ (no cuts).
- right: Require both charged-leptons have $p_T > 20$ GeV and $\not{E}_T > 25$ GeV. If $76 < m_{\ell\ell} < 106$, require $\not{E}_T > 40$ GeV.
- This greatly reduces separation b/w signal components.

dilepton event selection



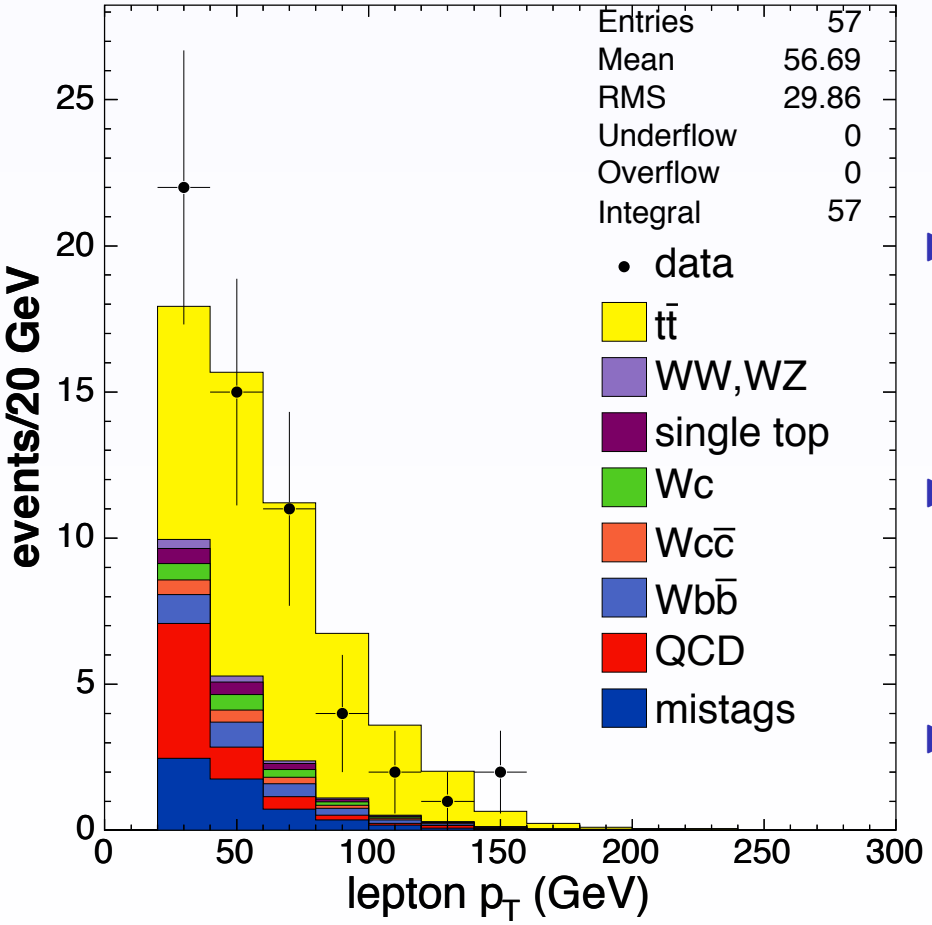
- the dilepton event selection preserves the separation in lepton p_T
- we expect this event selection will give better sensitivity to F_0 than l+track

dilepton data



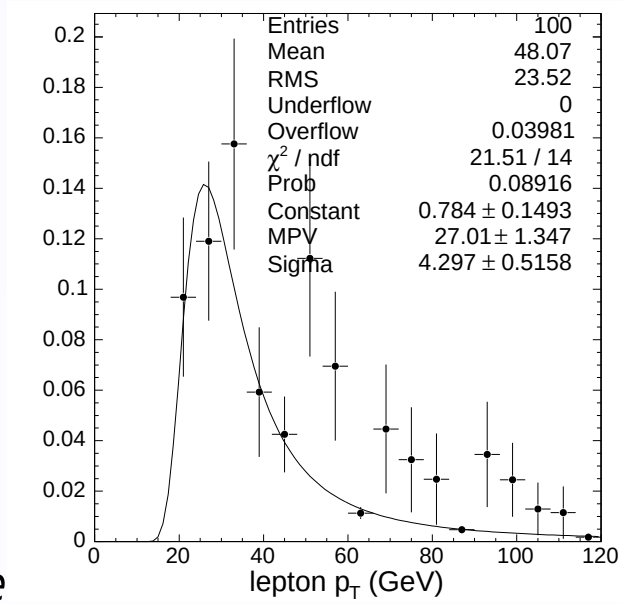
- The observed dilepton lepton-p_T distribution is still soft relative to the SM expectation.
- These data may yield a value of F_0 which is inconsistent with the SM prediction.
- Kolmagorov probability is 0.11

lepton+jets data

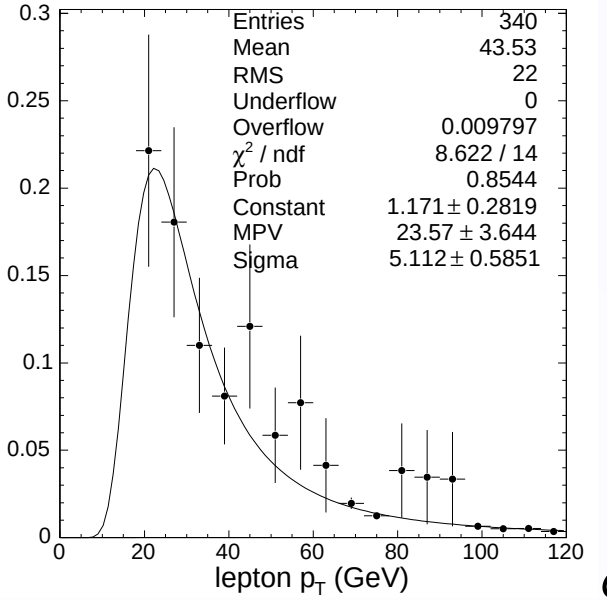


- The observed lepton+jets lepton-p_T distribution shows good agreement with the SM expectation.
- These data should yield a value of F_0 which is consistent with the SM prediction.
- Kolmagorov probability is 0.99

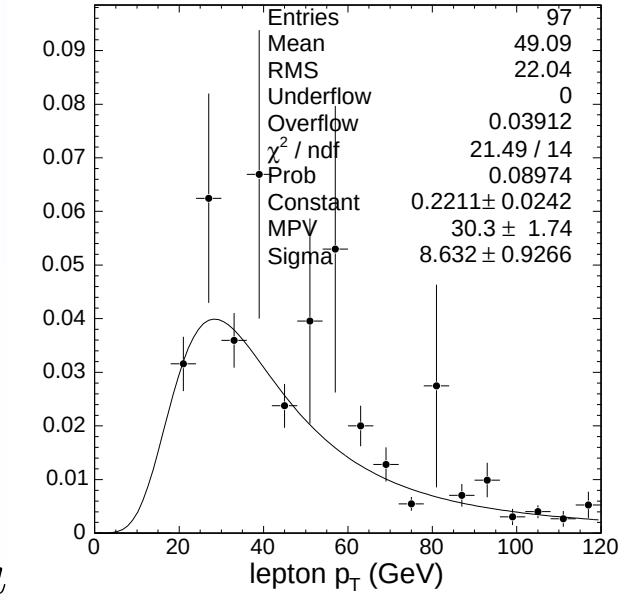
dilepton bg PDFs



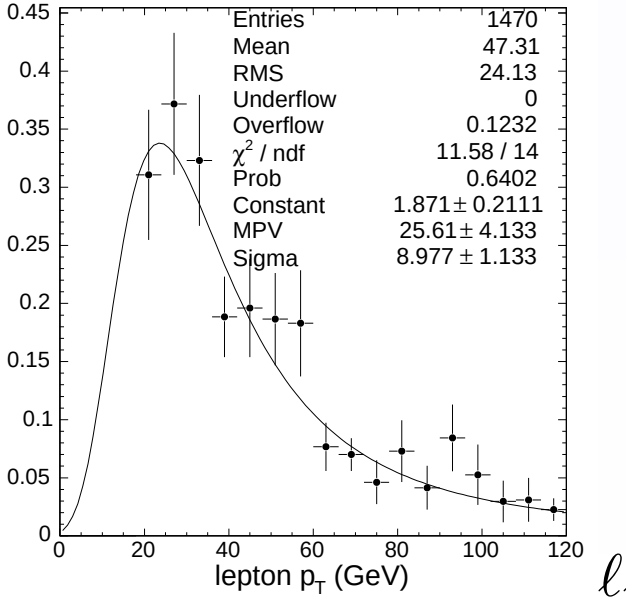
ee



$e\mu$

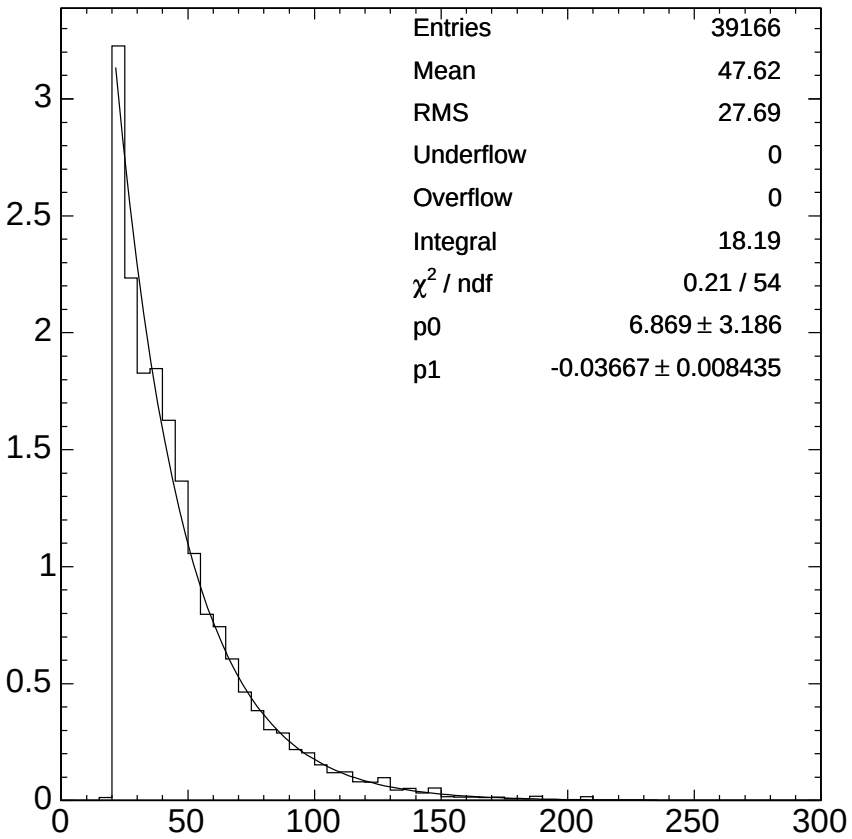


$\mu\mu$



$\ell\ell$

lepton+jets bg PDFs



- 10 lepton + jets categories in our fit
- all bg shapes fit well to simple falling exponential

lepton+jets acceptance ratios

3 jet bin

	$a_{L,0}$	$a_{R,0}$	$a_{L,R}$
CEM	0.790 ± 0.036	0.977 ± 0.042	0.809 ± 0.036
CMUPX	0.712 ± 0.035	0.945 ± 0.043	0.753 ± 0.037
all	0.753 ± 0.025	0.962 ± 0.030	0.783 ± 0.026

4 jet bin

	$a_{L,0}$	$a_{R,0}$	$a_{L,R}$
CEM	0.715 ± 0.030	1.061 ± 0.040	0.673 ± 0.027
CMUPX	0.751 ± 0.034	1.011 ± 0.043	0.743 ± 0.033
all	0.732 ± 0.022	1.038 ± 0.029	0.704 ± 0.021

dilepton acceptances

$$A_{00} = 0.0108 \pm 0.0004$$

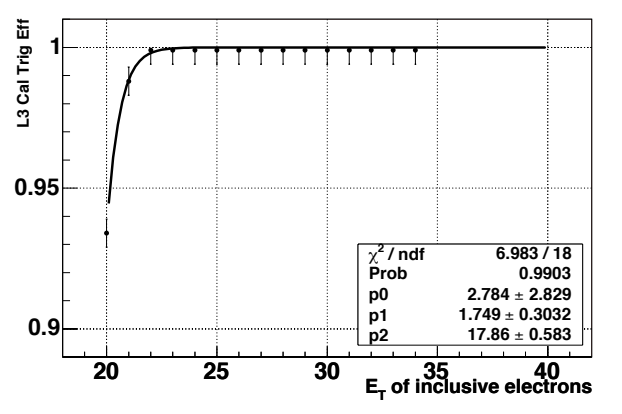
$$A_{0L} = 0.0088 \pm 0.0003$$

$$A_{0L} = 0.0076 \pm 0.0003$$

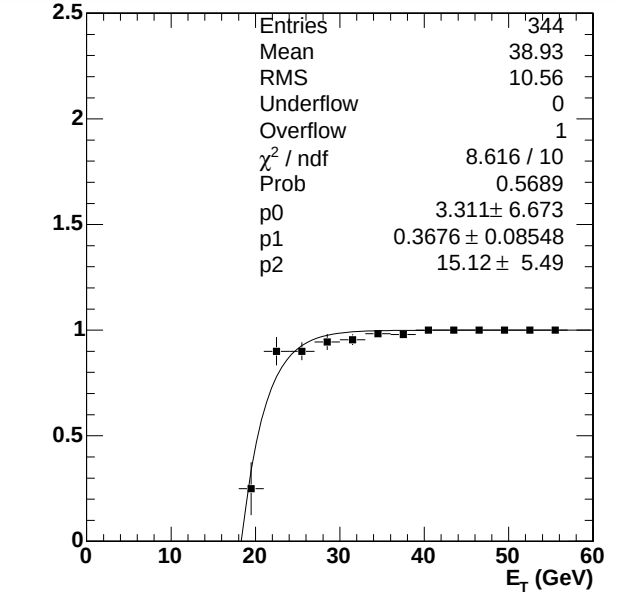
- these acceptances estimated with the `ttopmi... ttopri` Monte Carlo.
- Had to re-weight according to $cos(\theta^*)$ of second $tW\ell$
- These are in agreement with the dilepton group's overall acceptance estimate.

trigger effects

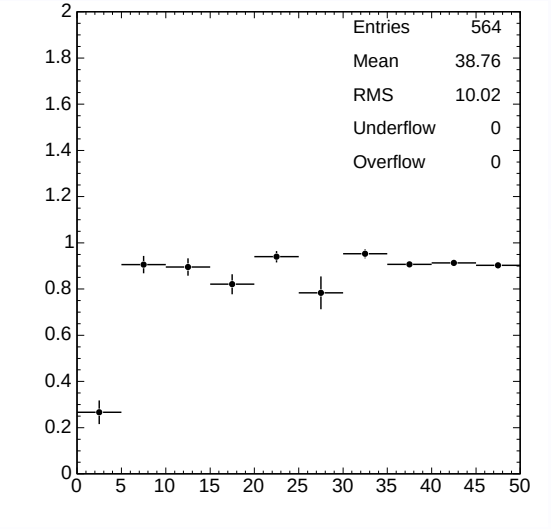
CEM efficiency (cdf 6234)



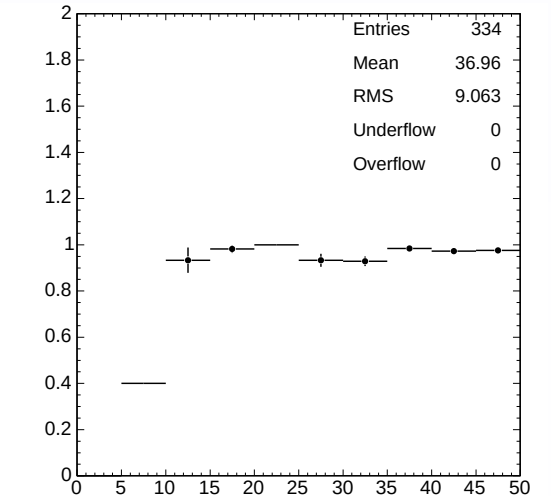
PEM efficiency (cdf 6864)



CMUP efficiency



CMX efficiency



schedule

- Plan to pre-bless on March 25th.
- Plan to bless on April 15th.
- Presently working on confidence belts and systematics.