Collaborator comments are shown in black, responses are shown in blue.

Abe Falcone

- lines 17-20: The sentence starting with "Consequently, the fundamental setup ...." is not actually a sentence. Do you mean to say: "Consequently, there is also ambiguity regarding the fundamental setup ...."

Fixed

- lines 107-116: - If you're going to discuss these fits to the rise and fall on less than 1-day timescales, then you need to show the data that you are trying to fit, and you should also show the function that you are fitting to them on the same plot. At no point in the paper do you show the sub-nightly data.

I did not show sub-nightly data as I was fitting the nightly-binned light curve. In any case, there were quite a few comments on how much sophistication is required in determining the rise/fall times given data sampling, so these fits have been removed from the paper.

- You should specify the definition of the rise and fall time. (I presume that the reader could go to Abdo et al. 2010 to get this definition, but it takes very little additional wording to define it here.)

Agree, but fits have been removed.

- How is "fit probability" defined? Is this null hypothesis based on chi2 fitting; if so, how many degrees of freedom were used in each case? This stuff should be specified, and the reader should be able to look at the zoomed in light curve to decide for themselves if the think these numbers characterize anything that is meaningful or physical.

Agree, but fits have been removed.

- lines 116-119:
- "Piecewise defined exponential function" does not give the reader enough information to figure out how this looks relative to the data and how many "pieces" are involved. This can be drawn on the same plot as requested above.
Removed
- "...very poor fit probability for both flares" This vague non-quantitative statement gives us nothing. This sentence should be quantified, or removed.
Removed

- line 120: " Variability on a nightly timescale was tested using the method of ..." - Such statements are misleading without the knowledge of the timescale over which it was studied since you'd get completely different results if you just looked in some specific time range. In truth it's actually even more complicated than that, but at a minimum, this sentence should probably be changed to something like " Over the complete time range of the light curve presented in this work, variability on a nightly timescale was tested using the method of..."

Modified as suggested.

- line 131-134: "The observations during this month seem to exclude the type of peaked flaring behavior seen at the same phase range in the previous two orbital cycles,..." - "seem to exclude" is another case of a non-quantitative statement that needs to be quantified with some numbers showing the chance that such flaring in the source could result in a light curve that has some quantifiable characteristics (e.g. chi2 deviation from a hypothesis of light curve with no flares)

similar to that of this source in December.

This has been quantified by fitting the light curve of each orbit with a constant flux model to determine how good/poor this description is.

- lines 164-167: "The highest energy gamma ray observed..." - One gamma ray? Are than any other remarkable high energy photons that are up there near it (e.g. $\gtrsim 5$ TeV), and is this photon consistent with the spectrum that we report?

This was poorly written. In my ED analysis I have 11 photons > 5 TeV, two of which are > 10 TeV in the on region (full data set).

- line 166-167: - You say "using a conservative estimate of the energy". This is not good enough. It's sketchy enough that we are talking about just one photon, but if we're going to do that, then we better be giving the actual error bars on the energy estimate. You need to state 10 TeV $\pm$?? TeV.

In the ED analysis, the two highest-energy candidates are 10.55 TeV and 10.410 TeV. In the VEGAS analysis the highest-energy candidates are 13 TeV and 12 TeV. We quote the more "conservative" value of 10 TeV in the paper. However, we can quote an error on it using the energy resolution at this energy.

- Figure 2: - When I look at the spectrum for this data set, in Figure 2, I see a data point above 10 TeV. How can we be plotting a data point above 10 TeV when we only have one photon up at 10 TeV?

We have more than one photon up here. The last bin covers the range $7.9433 - 15.8489$ TeV.

- lines 166-170, regarding the background of 10 TeV photons: "The observations during this month seem to exclude the type of peaked flaring behavior seen at the same phase range in the previous two orbital cycles, ..." - Based on the amount of time looked during this "no background time period" one can state the upper limit on the expected background rate of 10 TeV photons. Something like this (or some other method of getting the expected 10 TeV photon background rate) should be used to state this quantity.

These lines have been rephrased.

- Discussion and conclusion: Most of this discussion and conclusion rests on the 10 TeV photon. So, while it sounds nice in principle, it is important to address the several points I made above (lines 164-170 and Fig 2) about the spectrum and the multi-TeV/10 TeV photon (or photons) in order to lend this discussion any credibility.

Ken Ragan

Line 4: Remove "those"

Line 5/6: Remove "on various timescales"

Lines 17-20: no verb

Line 23: as **a** function

Line 41: add "with ellipticity e = ..."

Line 74: obtaining $\rightarrow$ comprising

Footnote 1: use shorter reference

Line 115: Remove "thus"

All the above have been fixed.

Lines 120-124: If the rise/fall times are 0.4 days, isn't it obvious there's variability on a nightly timescale? So does this paragraph add anything?

The fits of the functional forms to the flares in order to get the rise/fall times have been removed. This paragraph has been rephrased.

Line 122: Remove "of"

Lines 141-154: Might be easier to read in a table or at least aligned within a text box.

Line 178: ATel → use full name

Line 208: the means → "a prescription" might be better

The above have been fixed.

Line 229/30 and 256: Strange to call this an efficiency as eff. is usually between 0 and 1. How about "effectiveness" or "efficacy"?

Went for "efficiency parameter".

General rule for bib: * > 3 authors: 1st author et al. * ≲ 3 authors: all authors listed

The rule for how this should appear is set by the .bst file, and I'm using apj.bst.

Problem with Dhawan reference - lines 218-320

Fixed

Elisa Pueschel and Maria Krause

Lines 2-6: Might want to define first that binary systems consist of a compact object (such as a pulsar) and companion star?

Fixed

Lines 17-20: It looks to us that there is something missing in this sentence e.g. a verb? Suggest "process" rather than "setup".

Fixed

Line 32: Said Be star in abstract - are they the same?

Be and B0 Ve are the same, but it is confusing, so I've made it B0 Ve throughout.

Line 41: Suggest that you mention "eccentricity e"

Fixed

Lines 50/1: This could be a separate sentence and not written in brackets.

Fixed

Line 54: Fall → fall

Quoting a range of months instead

Lines 78-84: Here, you do write again "above background" (twice in this sentence). Is the second one really necessary? This sentence is pretty packed - suggest splitting into two.

Fixed

Line 92: same energy range as what? in the TeV energy range?

I meant above the same energy threshold. This should be clearer now.

Footnote 1: Wouldn't only the main webpage be enough? Or could you also cite the proceeding of Nahee on the VERITAS performance at ICRC 2015?

Now using `veritas.sao.arizona.edu/specifications`

Figure 1 caption: Could you rephrase this sentence? E.g. "The data for the first orbit (October) are shown with orange circles, while the second orbit is represented by purple diamonds and the third by blue squares." or "The data of the three different orbits are represented by orange circles, purple diamonds, and blue squares, respectively." Put the month in brackets for the 2nd and 3rd orbits as you do for the first orbit. What is an "unbounded approach"?

Fixed.
The **unbounded** approach assumes you can find the maximum likelihood analytically and therefore the val of $-2\log(\lambda)$ at that point. It works as follows: To find a $100(1 - \alpha)\%$ confidence interval, start at the maximum likelihood estimator of the flux ($\hat{\mu}$) and then move to the left and right to find the points where the function $-2\log(\lambda)$ increases by the α percentile of a χ^2 distribution with 1 degree of freedom.
In contrast, the **bounded** approach uses the physical limits on the parameters, for example, the increase of the function $-2\log(\lambda)$ from $\mu = 0$ if $\hat{\mu} < 0$.

Line 105: Equation 7 → Can you add some indication of the functional form e.g gaussian, asymmetrical etc.?

Fits are removed.

Line 108: is not very good, with a → has a poor

Line 109: Not even sure it is meaningful to give the numbers when the fit is so poor.

Lines 113/4: How many hours did you take on this orbit compared to the first one? How many consecutive nights was the source observed?

Info added to Table 1

Lines 116-118: I don't think this sentence adds anything, suggest dropping.

Removed

Table 1: How does this subdivide into F1 and F2 and orbits?

Fixed

Line 120: Could you add a short description of the variability study e.g. Bayesian blocks?

Fixed

Line 122: Something sounds confusing here. Shouldn't be the "of" removed?

Fixed

Lines 123/4: looks much more significant than that based on Fig. 1. It is just for the two flaring nights (in which case it looks like less than 3 sigma from Fig. 1)?

Yes, I had made a mistake in typing the maths. Good catch - thanks.

Lines 130/1: Maybe write "at which the previous flares in 2014 were detected"?

Fixed

Lines 141/2: Could you mention the citations which are shown in the spectral plot here again?

Fixed

Lines 151-153: Is it of interest to make a spectrum for the non-flarey orbit? Is it detected significantly enough to do so?

It's on the wiki page now.

Lines 156-159: Seems really high, given the spectral index and the energy threshold I'd expect 20%. Also, why take the index at 2.5 instead of 2.35?

Fixed

Lines 164/5: observed during these observations → observed

Fixed

Line 167: What is a "conservative estimate"?

Rephrased

Lines 167-170: Don't understand this. Are you saying there were no OFF counts at this energy?

Yes - rephrased.

Lines 171-184: Not sure this paragraph adds anything.

Sure, but we would like to at least mention the multiwavelength partners.

Line 207: for → of and provides → "provide" as it is "et al."

Fixed

Line 214: Be star or B0 Ve star?

Fixed

Line 220: - it should be "about 10 TeV photons..." (through the whole paper)

Why is ∼ 10 TeV not ok? The tilde is followed by a number, I thought this should be fine?

Line 243: Why 10 TeV? Due to the high energy point at this energy?

Yes, assuming KN scattering, the fact that we measure 10 TeV photons means there must be electrons with energy of **at least** 10 TeV. However, Martin suggested that as the photon won't carry all the energy of the electron after scattering and there is no evidence of a cutoff in the spectrum, we can use an example case of a 20 TeV electron.

Lines 269-272: We suggest: "The constraints are strongly dependent on the assumed location of

the emission region, which has been taken to be coincident with the..."

Fixed

Line 276: and fragments, and these → and

Rephrased

figure 3 caption: it is a little confusing to call it the accelerator efficiency when it is always bigger than 1. Suggest to call it "accelerator efficiency parameter"

Fixed

Line 277: region, pushing it closer to the pulsar. → region. This pushes the star closer to the pulsar.

Fixed

Lines 277-279: What is exactly pushed closer to the pulsar: the Be star or the shock coming from the pulsar wind? Maybe I don't understand the physics behind it fully. Any explanation is welcome.

Right, the incoming fragments push the shock closer to the pulsar.

Line 280: timescale of a few hours → Confusing to refer to timescale of a few hours when you are really interested in timescale on the order of the orbit length, is that right?

No, here we are looking for something to explain the acceleration of photons in the flares on the timescale of < 1 day.

Last paragraph: This ends rather abruptly. We would like to see some concluding sentences.

Fixed

Amy Furniss

Lines 17-20: Not a full sentence.

Fixed

Line 23: strongly as **a** function

Fixed

Line 54: Its only fall in the Northern Hemisphere, I would instead give a month range, so its a global statement instead of a hemisphere-dependent statement.

Fixed

Line 58: Remove "ever"

Fixed

Line 83: Remove "above background"

Fixed

Figure 1: This could be my naivety, but light curve of an orbital phase, right? Or is it standard

to just refer to this as a light curve?

Fixed

Lines 102/3: 14 November

Isn't the date format YYYY Month DD?

Line 108: Remove "very"

Fixed

Line 122: of a hint→a marginal indication of ... (or at the very least, it has to be "a hint of")

Fixed

Line 175: H-alpha → Hα

Fixed

Line 178: ATel→Astronomer's Telegram. Also, it might be good to put a footnote with the http address of the Astronomer Telegram general website.

Fixed

Line 183: by "this campaign" do you mean the MWL campaign, or the MAGIC campaign? More specific sentence would be helpful here.

Fixed

Line 217: "take place deep in the Klein-Nishina regime,"

Fixed

Line 240: gamma-ray spectral indices

Fixed

Line 256: hmmm.... it looks like I really don't understand this efficiency parameter....

Generally $\eta \gg 1$ in this parameterization. $\eta = 1$ means the accelerator is Bohm limited.

Line 269: I'm not sure this requires a new paragraph - I would tack it onto the last paragraph.

Rephrased

Figure 3 caption: periastron, respectively

Figure removed

Last paragraph: This paragraph seems like it shouldn't be the last paragraph. Perhaps you need a short summary paragraph about the observations, and model application to wrap the paper up.

Fixed

Jamie Holder

Abstract: Remove ",although not entirely understood,". It makes the first sentence too long, and difficult to parse. You don't really need that information here, but if you'd like to include it, add

another sentence.

Fixed

" 5 15% Crab Nebula range " → between 5 and 15% of the steady flux from the Crab Nebula

Fixed

This is the brightest such activity from this source ever seen in the TeV regime, and the brightest emission observed from any of the known TeV binary systems. (assuming this is true - I think it is...)

I'm not sure - it look like 1FGL J1018.65856 gets very close ... http://www.aanda.org/articles/aa/full_html/2015/05/aa25699-15/aa25699-15.html

l2: generation ... has → generation ... have

But "generation" is singular ...

l3: opened up the study → ugly phrase - can you think of a replacement...?

Fixed

l6: I think you have to mention that TeV2032 is now proposed to be a TeV binary (and would definitely be a pulsar, if so): http://arxiv.org/abs/1502.01465

Fixed

l10: HESS J0632+057 (Acciari → you should reference the HESS detection paper here (keep the VERITAS paper too, if you like).

Fixed

l11: comma missing: "class, 1FGL"

Fixed

l14: pulsar; there → pulsar. There

Fixed

l17: setup that produces the → mechanism responsible for the

Fixed

l17-20: sentence makes no sense. You want to say that the mechanism is also ambiguous, but the phrasing is wrong.

Fixed

l21: orbital periods of HMXBs vary from several days (LS 5039) to several years Cyg X-3 (V1521 Cyg) has a period of 0.2 days: https://heasarc.gsfc.nasa.gov/W3Browse/all/hmxbcat.html TeV 2032, if a binary, has a period of decades.

Rephrased as "TeV-emitting HMXBs".

l43: phi=1.081 → phi=0.081

Fixed

l54: Fall→ fall

Using a range of months instead.

l67: use the abbreviated url: `http://veritas.sao.arizona.edu/specifications`

Fixed

l105: fitting Equation 7 of Abdo et al → the fit is done using equation 6. You should also give a more meaningful description to save the reader looking it up - for example: The rise and fall times of the flares were determined by fitting a double exponential function (Equation 7 of Abdo et al. (2010)) to the light curve of each orbit. or, even better, give the equation and just reference Abdo (it's not big).

It's equation 6 in the preprint, and equation 7 in the journal. In any case, the fits have been removed from the paper.

l107: The fit to the first orbit is not very good... 3e-7 means the fit has failed completely, and the parameters you give are meaningless. What does it look like if you draw it over the points (can you point me to, or send me a plot?)

Plots are on the wiki, but the fits have been removed from the paper.

l122: Similar to their findings for this source, of a hint of nightly variability → rephrase, makes no sense.

Fixed

l131: The observations during this month seem to exclude the type of peaked flaring behavior seen at the same phase range in the previous two orbital cycles, perhaps indicating some orbit-to-orbit variations in the source. This is wishy-washy waffle - do the observations exclude similar flaring behaviour, and indicate orbit-to-orbit variability, or do they not? If they do, what is the statistical significance of the effect? You should be able to think of some reasonable test - for example, take the functional form of the most well measured flare, and see if you could put the points from the other months through it - it's probably possible, given the sampling...

Rephrased. This is tested by seeing how well the light curve from each orbit is described by a constant flux model.

l142-153: maybe put the spectral info in a table instead?

Fixed

l156-163: these systematic errors are much larger than we usually quote? Why? If there's a good reason, it should also be mentioned in the paper.

Fixed

l164: highest energy gamma ray →highest energy gamma ray candidate (we can never definitively identify a gamma-ray).

Fixed

l167 (using a conservative estimate of the energy) → cut this, or explain it.

In the ED analysis, the two highest-energy candidates are 10.55 TeV and 10.410 TeV. In the VEGAS analysis the highest-energy candidates are 13 TeV and 12 TeV. We quote the more "conservative" value of 10 TeV in the paper. However, we can quote an error on it using the energy resolution at this energy.

l187: established, and as → established and, as

Fixed

l200: the vast majority → the majority (there aren't that many!)

Fixed

l206: BP →PB

Fixed

The discussion looks nice - I'll try to give it a more detailed read later on.

Hugh Dickinson

Line 20: add "remains uncertain"?

Fixed

Line 26: "studied" → "detected and studied"

Fixed

Line 34/5: Is the observed emission TeV, MWL, broadband? References?

Multiwavelength. References added for radio, optical, X-ray, γ-ray, and VHE γ-ray regimes.

Line 37: structure → motion

Fixed

Line 41: elliptical → eccentric

Fixed

Line 51: Ref to Dubus 2013 → might be better to use a more direct reference, rather than a review.

Fixed

Line 62/3: Use \prime for coords.

Fixed

Lines 76-77: covered → sampled and sampling → covering

Fixed

Lines 82-83: Remove "above background".

Fixed

Line 105: perhaps add a brief description of the functional form to avoid reference chasing for readers.

Agree, but fits have been removed from the paper.

Line 107/8: General comment. I presume that the fits are not to the lightcurve in Fig 1 since there are not enough data points to constrain the function parameters. Are you doing an unbinned likelihood fit, a fit to the raw excess counts, or using a more finely binned lightcurve?

The fits are to the nightly-binned data in Fig 1 **but** I used the insignificant data points + errors in place of the upper limits.

Line 116/7: Is this similar to the other function but without a constant offset?

The function from Abdo et al. is an asymmetric Gaussian style thing, and the other is a piecewise exponential with a rising exponential form for $t < t_0$ and a falling exponential form for $t > t_0$. Both are shown on the wiki, but they are not longer in the paper.

Line 121: did you try any other methods e.g. Bayesian blocks.

This part has been updated, but no, I did not try Bayesian blocks.

Line 163: maybe add a comment stating explicitly whether spectral index variability can or cannot be excluded by the observations.

Fixed

Lines 171-177: Any information about detections, fluxes, variability. References?

No, I believe the analysis is still a work in progress here.

Lines 212/3: I might reverse the order i.e "stellar photons by TeV electrons."

Fixed

Figure 3: For some reason, the rendering of these regions doesnt seem to work uniformly for all PDF viewers/printers.

Weird, but this plot has been removed now anyway.

Martin Pohl

You may want to hyphenize composite adjectives, otherwise the wrath of Professor Moriarty will descend on you.

* Line 83/84: Remove "above background".

Fixed

* Line 89: What is the energy band?

> 300 GeV. This should be clearer now.

* Line 104 and following: A number of things. First, please give the Abdo formula. Then, I don't believe the fit probability can be 3e-7, if you have only two significant data points and the rest is upper limits. My last question is how you treat the upper limits. As you know, χ^2 works only with Gaussian probability distributions, but here you may have to truncate the distributions at zero flux and renormalize.

The function from Abdo et al. is an asymmetric Gaussian style thing ($F(t) = F_c + F_0 \left(e^{\frac{t_0-t}{t_r}} + e^{\frac{t-t_0}{t_f}} \right)$).
The fits are to the nightly-binned data in Fig 1 **but** I used the insignificant data points + errors in place of the upper limits. You can see the plots of the fits on the wiki page.

* Line 121: Explain in one sentence the method of Aliu et al.

This part has been updated.

* Lines 132 and 134: The first "seem" is fine, but the "perhaps" is too much. Do we not trust a factor-4 decline in flux? If so, we shouldn't write this paper.

Fixed

* Lines 191 and 206: Make up your mind, BP or PB.

Fixed

For the remainder of the discussion, I recommend using a example case a 20-TeV electron, because the photon will not carry all the energy and there is no evidence of a spectral cut off at 10 TeV anyway.

Ok, I have updated the discussion using a 20 TeV electron.

You cannot simply reduce the magnetic-field strength, because then the Larmor radius of the radiating electrons gets uncomfortably close to the system size. Your equation 5 implies that r_L/d is $> 5\%$ at 10 TeV and $> 20\%$ at 20 TeV. The leakage time may be the shortest timescale of the system, unless the magnetic field is very close to the upper limit given by equation 5.

I now get a lower limit on the B-field strength by requiring that $r_L <$ system size. I then use $t_{\rm acc} < t_{\rm KN}$ to get an expression for the lower limit of B in terms of $\eta_{\rm acc}$ and plug in the lower limit for B in order to constrain $\eta_{\rm acc}$.

I know we don't want to discuss this in the present paper, but the simple KN scattering implies an extremely hard synchrotron spectrum in the Swift energy band. Do we see that? You may want to check that before publishing this discussion.
May be we do see beamed emission here ...

We have an average index of about -1.5 in the Swift energy regime, so there is some tension. Your feeling is that we can only get away with weak KN modification. I have added a sentence to the discussion about Swift index maybe challenging the simple scenario we present. Is this enough?

Phil Kaaret

Line 17 - this sentence seems to lack a verb.

Fixed

23 - add "a" before "function".

Fixed

89 - give the energy band. Also, 31.9 is 32.0 in table 1, be consistent.

Fixed

105 - please explain to the reader what equation 7 of Abdo et al. represents.

Fits have been removed.

166 - Can you quote the highest energy as 10 XX instead of 10?

In the ED analysis, the two highest-energy candidates are 10.55 TeV and 10.410 TeV. In the VEGAS analysis the highest-energy candidates are 13 TeV and 12 TeV. We quote the more

267 - you don't need to repeat "$t_{acc} < 1$ day".

Also, be sure to refer to the source with its VERITAS name in the keywords.

Gernot Maier

Abstract: Remove "although not entirely understood"

Lines 107-119: The fit is very poor, but we still use the results? We either should improve the fit or do something else. With the current description, the reader does not know if the results is reliable at all.

Lines 131-136: Quite a brave statement, as we don't have a complete coverage of the phases. We cannot exclude a flare which was maybe two days earlier in phase than the Oct flare.

Lines 156-159: The discussion on the systematic error on the flux is wrong - the uncertainty for the flux is also in the order of 20%, see attached study.

Figure 2: Use larger markers.

Lines 203-206 and 211-213 have almost the same info.

Line 218: "in which all of the electron energy" $\rightarrow$ shouldn't that be "almost all"?

Henrike Fleischhack

Line 17: You the verb here: "Consequently, the fundamental setup that produces the TeV emission along with its characteristic variability on the timescale of one orbital period "

Line 43: " superior conjunction at phi = 1.081" - I thought phi is between 0 and 1?

Fixed

Line 167: "There are no background events with an energy above 4 TeV on this night, so it is assumed that the contribution of the background at 10 TeV is negligible." - This sounds like circular logic (there is no background because there is no background). How about "There are no events in the OFF region with energies above 4 TeV...".

Fixed

Gary Gillanders

Lines 17-19: "Consequently, the fundamental setup that produces the TeV emission along with its characteristic variability on the timescale of one orbital period." - this does not make sense as a standalone sentence.

Fixed

Lines 51-52: Would "leading to some uncertainty in the orbital parameters" be better than "leading to some uncertainty of the orbital parameters", which could be taken as you being uncertain as to what constitutes orbital parameters.

Fixed

Line 75: Should "quality selected lifetime" read "quality-selected lifetime"?

Fixed

Line 95: Would "poor weather conditions the following two nights" read better than "poor weather conditions for the following two nights"?

Fixed

Table 1: The fluxes are quoted in multiples of "10^{-11} photons cm^{-2} s^{-1}" in the table but in multiples of "10^{-12} cm^{-2} s^{-1}" in the text of the paper. While both are equally valid, it would be better to use the same format in both text and table, i.e., both in terms of whether the word "photons" is included and in terms of whether multiples of 10^{-11} or 10^{-12} are used.

Good point - fixed

Line 122: "of a hint of nightly variability" should read "a hint of nightly variability".

Fixed

Lines 126-127: "Follow-up observations conducted by VERITAS during the next month (2014 December 10-12)" - Elsewhere in the paper you quote the MJD along with the calendar date but do not do so here. It would be useful to quote MJD here since you give MJD (but not calendar dates) in Table 1.

Fixed

Line 187: The comma is misplaced and should be positioned after the "and" rather than before the "and".

Fixed

Line 192: There should probably be a hyphen in "particle-acceleration processes".

Fixed

Lines 273-284: In marked contrast with the quantitative modelling discussion in the earlier parts of "3. Discussion and Conclusion", this scenario is presented qualitatively without any mathematical detail. It is almost like an afterthought, coming after the conclusion to the quantitative interpretation of the observations/model.

True. This has been moved so that it now preceeds the more quantitative discussion.

Mark Lang

Lines 17-20: not a sentence

Fixed

Line 23: "...as a function..."

Fixed

Lines 141 - 153: Would the spectral parameters be better presented in a table rather than within the text?

Fixed

You don't mention that the results are confirmed with an independent analysis suite? - maybe we don't need to keep saying this.

I don't know ...

Wystan Benbow

L18-20: Feels like a sentence fragment

Fixed

L23: as → as a

Fixed

L79: Quote On, Off, and α; it gives a feel for S/N and is really what you measure

Fixed

L137: energy spectrum – it is a photon spectrum, energy spectrum is $E\frac{dN}{dE}$

Fixed

Eq 1: Generally Γ is positive

Fixed

L148-153: Use subscripts in the parameter names

Presented in a table now.

Fig 2: Weird, your spectral point is higher than your highest energy photon

Right - we have 2 photons above 10 TeV, and for the VEGAS analysis (which is shown in the paper) these photons have an energy of 13 TeV and 12 TeV. The last bin in the spectrum covers the range $7.9433 - 15.8489$ TeV.

L178: ATel is jargon

Fixed

L184: upcoming $\rightarrow$ future

Fixed

Discussion: A lot of credence for 1 photon!

I hope this is clearer now.

Moritz Hütten

Abstract: Remove "When active in the TeV regime" and add TeV to get "... elevated TeV emission ..."

Fixed

Sec2:

AZ $\rightarrow$ Arizona

Fixed

Use shorter link in footnote.

Fixed

$\frac{dN}{dE} \rightarrow \frac{d\phi}{dE}$

I don't want to use ϕ here as I use ϕ to represent the orbital phase.

Put spectral parameters in a table.

Fixed

Sec3:

Don't like the notation of the equations.

Fixed

Brian Humensky

lines 120-124: Can you explain this method youre using to check for night-to-night variability? I went back to the earlier Aliu et al. paper, and theres not a justification for the method there either, which Im embarrassed to say I hadnt caught back then. Why did you choose this method, as opposed to simply taking the difference in flux between subsequent nights and propagating

the errors? Did you also account for a trials factor - is that what brings the significance down to 3 sigma? (if so, that should be discussed in the paper) Comparing the UL on 56946.3 to the detection on 56947.3, my guess is a simple difference is ¿ 5 sigma, but certainly ¿ 4 sigma. I think one can also make a careful statement about 56948.3 vs 56950.0 - very significant change in less than two days. It seems we should be able to claim a significant detection of night-to-night variability, especially given the fits you report in the previous paragraph.

Ok, the first thing is that I had made a silly mistake in the maths last time. But I also recalculated the significances as you suggested, and I find that the results are very similar. I put a table on the wiki page to compare.

however

lines 104-119: Is it really justified to fit so few data points (including so many upper limits) with these functions? Do you use the rise and fall times in the discussion - especially, do you use the uncertainties? If not, I think you could just as well say that the data are too sparsely sampled to measure the rise and fall times well, but they can be estimated to be on the order of 0.5 - 1 day or so. I dont think its fair to fix t_0 to the MJD of the observed peak since our observations were so sparse, though I imagine that by not fixing t_0, its hard to get a stable fit? But I think that also speaks to how much sophistication is worthwhile with such a limited sampling. Again, I realize youve already showed these results multiple times and I should have given you these comments earlier on, but I didnt get a chance to think them through until late in the ICRC.

In the Abdo et al. paper, they also fix t_0. However, I've removed the fits from the paper.

Table 1: it'd be useful to list the duration of each exposure here as well to give a sense of the relative depth of each.

Fixed

I think we need to make an effort to finish documenting the primary/secondary comparison as well before submitting.

Fixed - please check out the wiki page and let me know if think there is still something missing.