

Recommended Nomenclature Updates Kneeded by the High Energy Astroparticle Physics Community

Melissa, ISAPP 2025
June 18, 2025

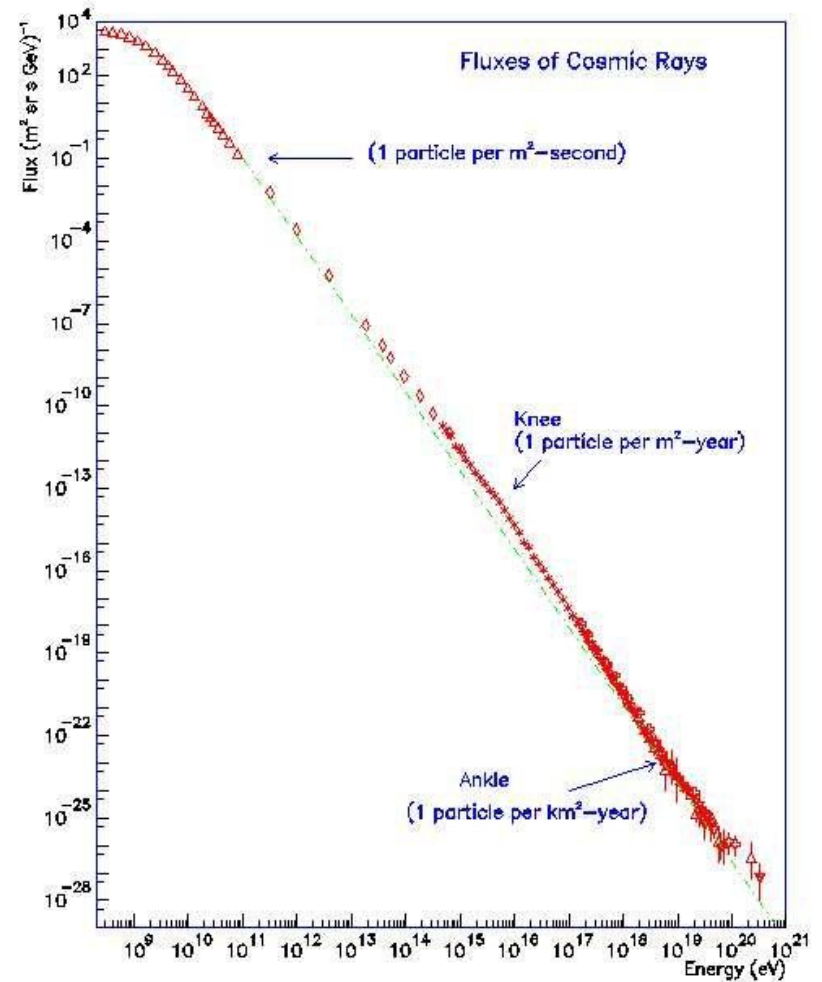
The All-Particle Cosmic Ray Spectrum

Excellent plot

S-tier

Absolutely essential

We love it, we love to see it!



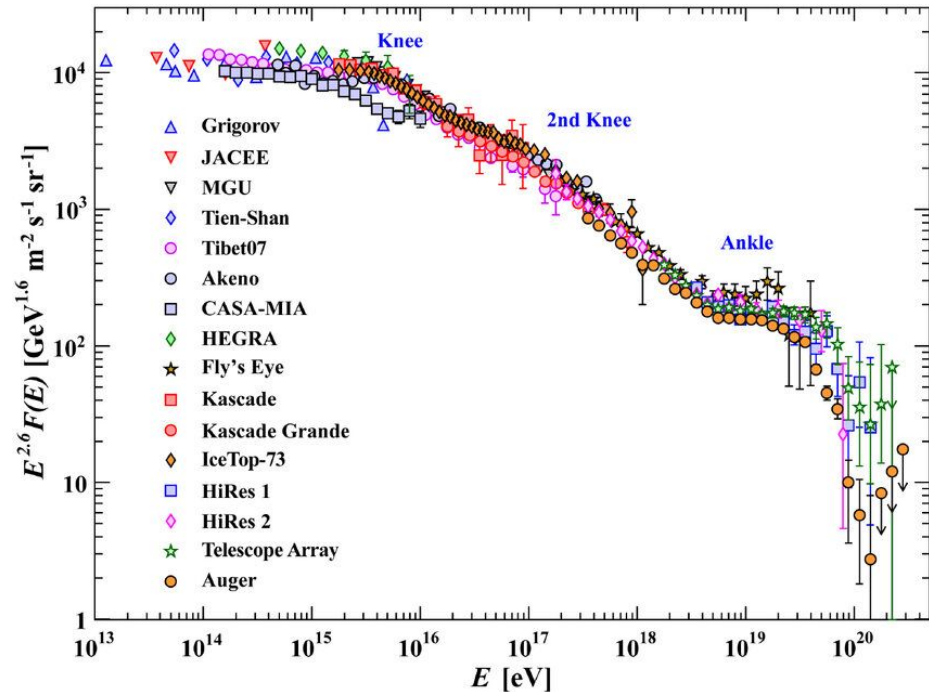
The All-Particle Cosmic Ray Spectrum

Problematic naming

Has not been accurate since the 1960's

Pitifully Unintuitive

Humans do not have a second knee

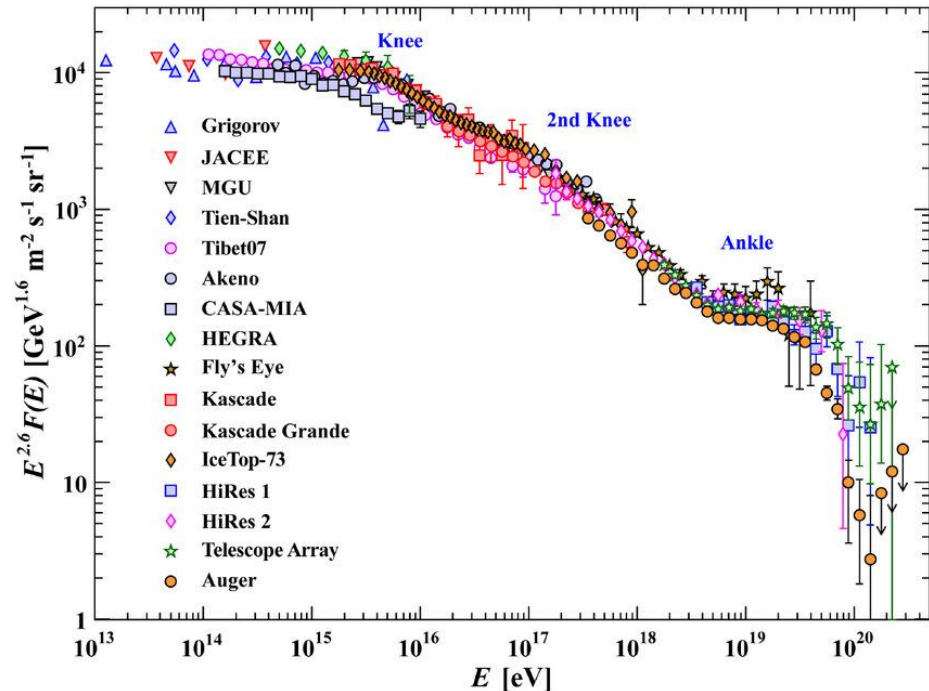
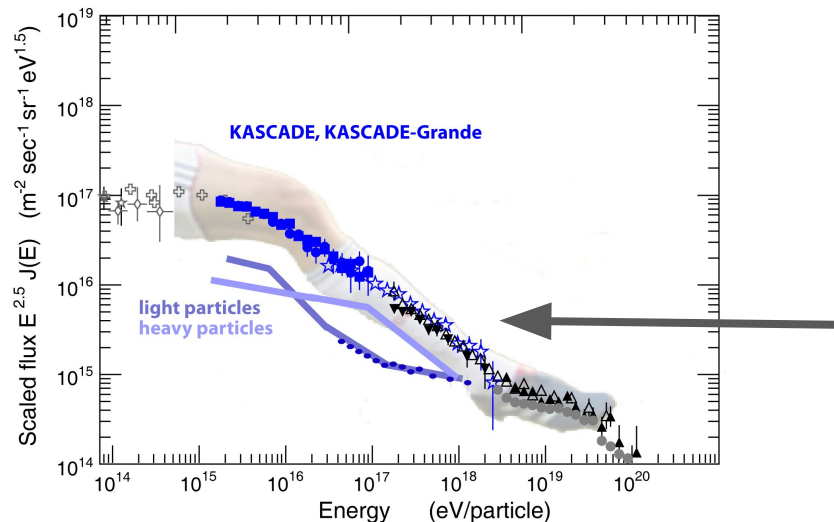


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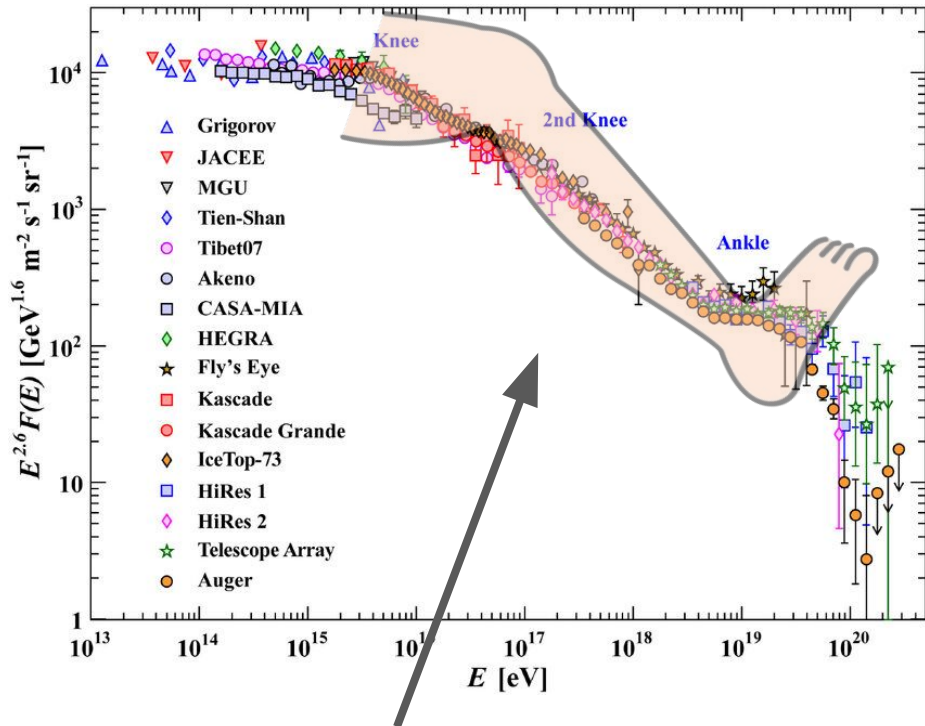
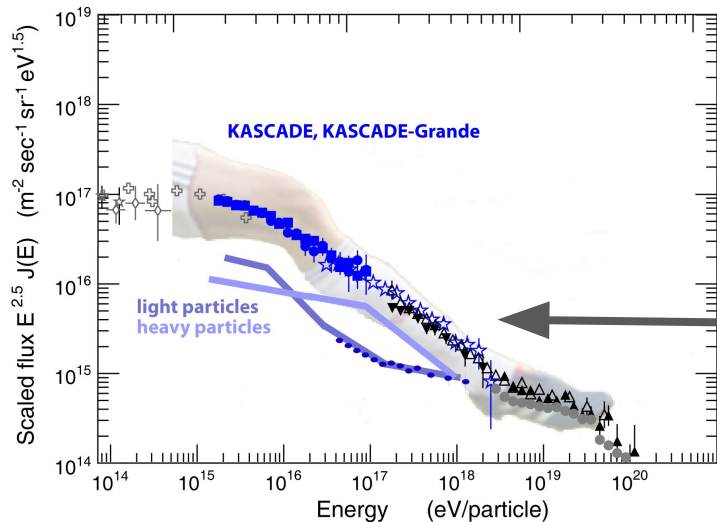
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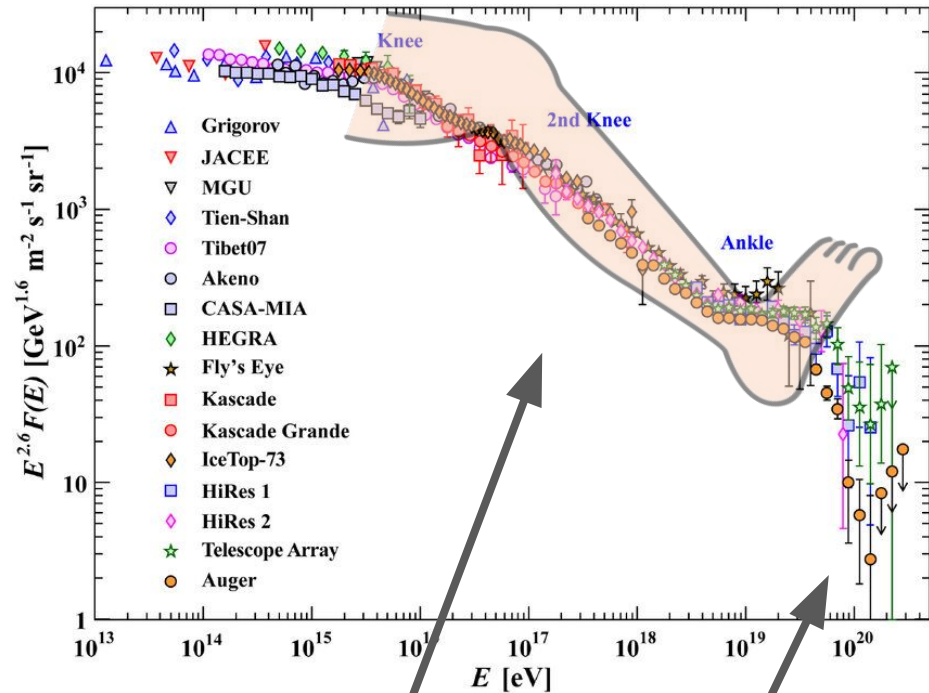
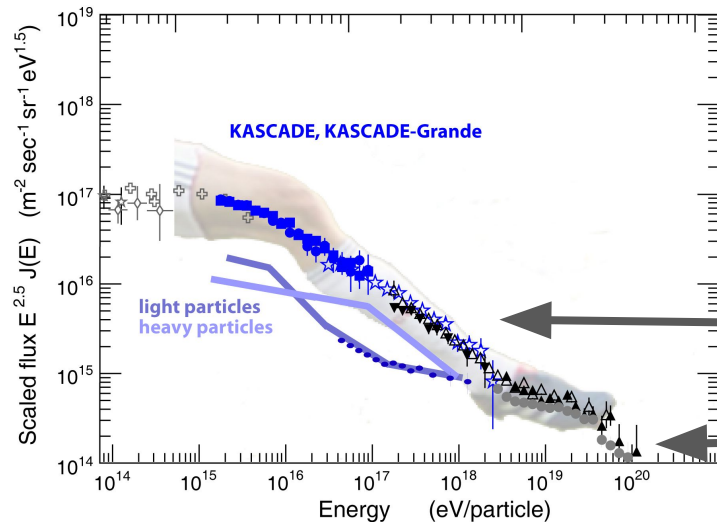
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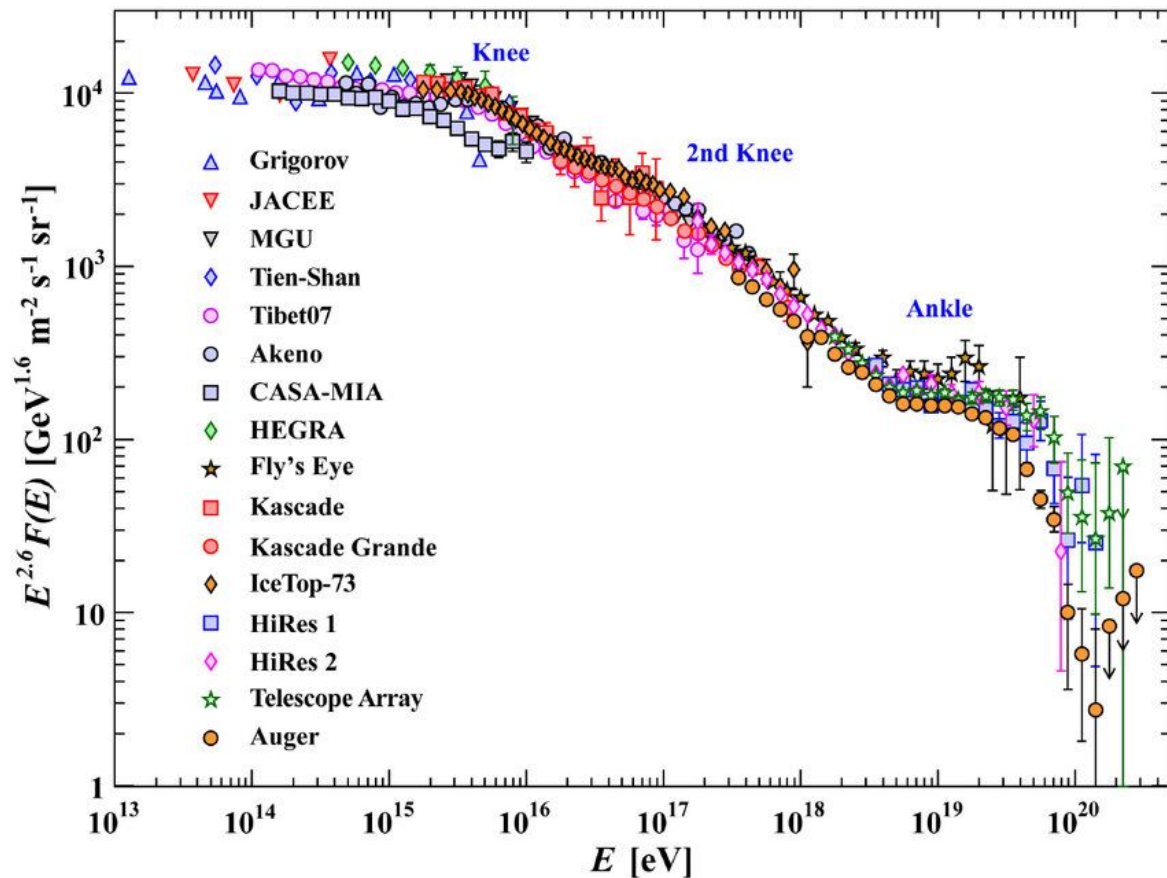
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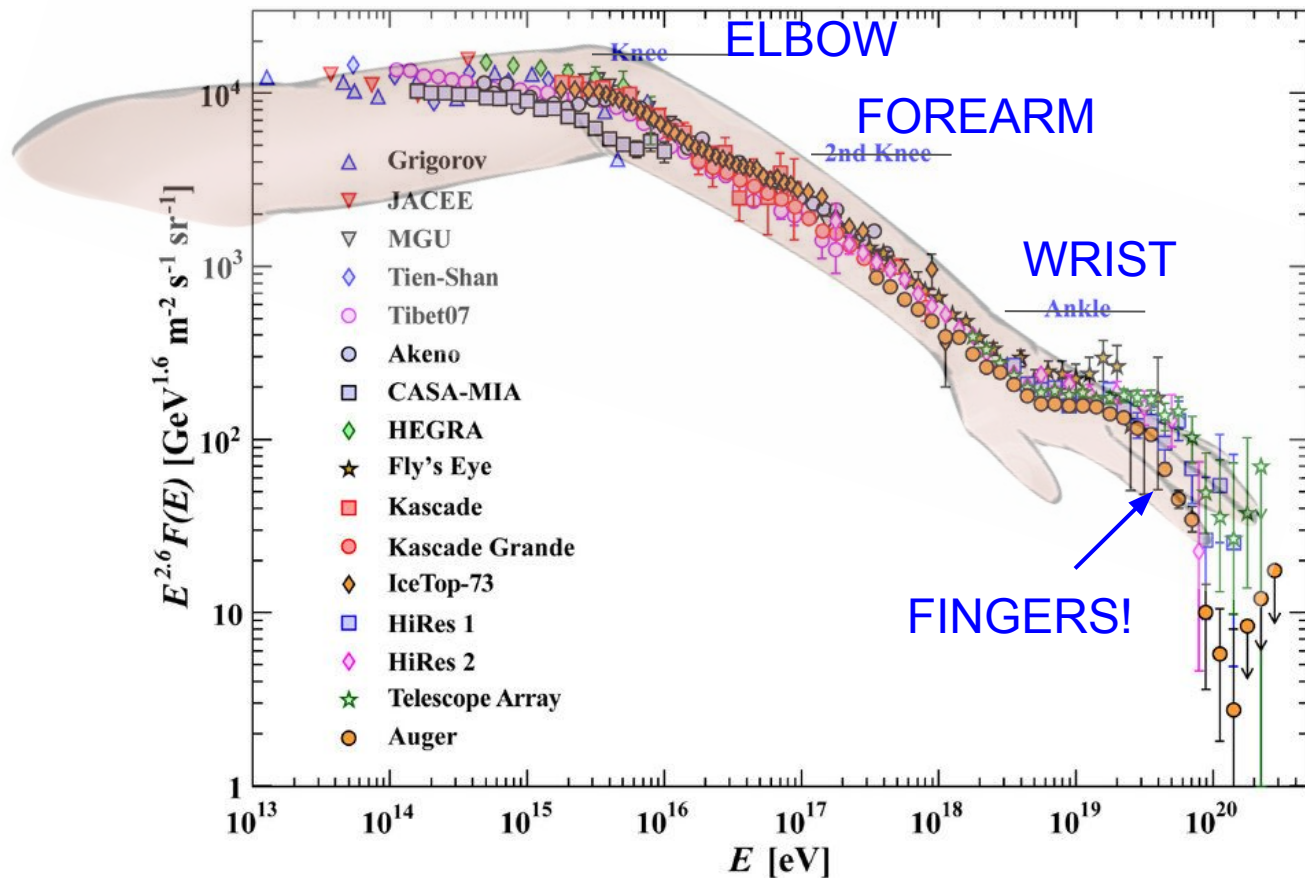
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THIS IS NOT A TOE :(

Recommended Change: It Is An Arm!

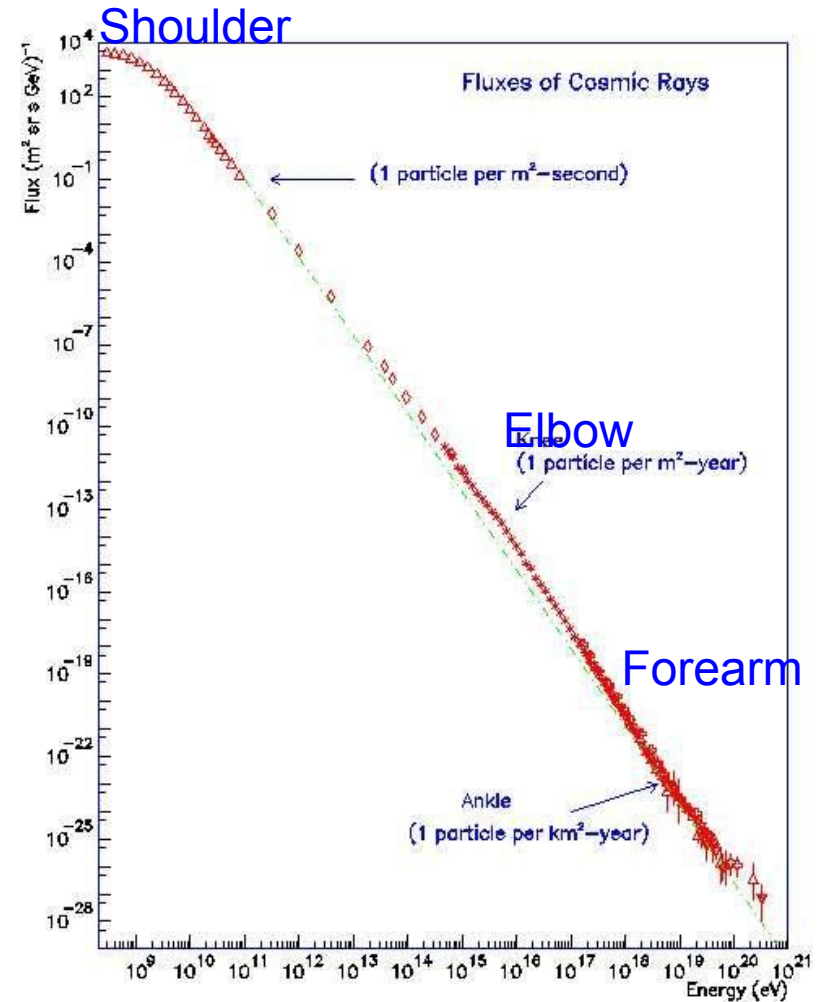


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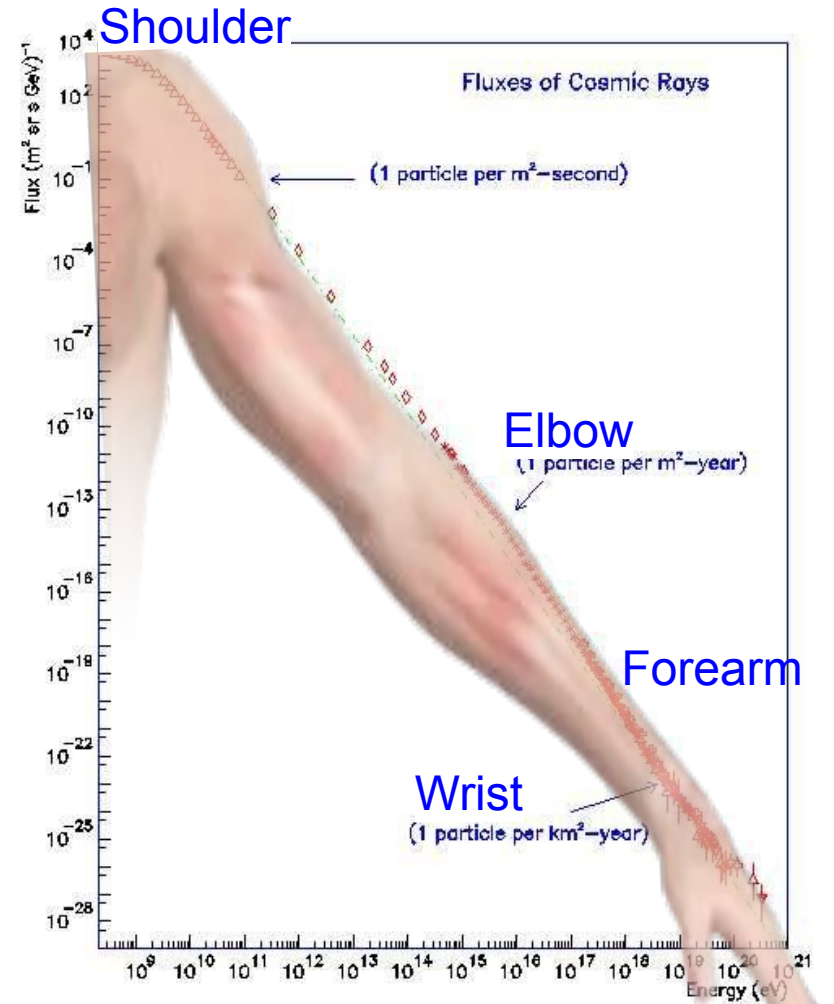
THE COSMIC RAY ARM

- We can include solar modulation as “the shoulder”
- Fingers and wrist can bend to accommodate different propagation and acceleration models
- Any new feature discovery that doesn't fit can be called a fracture if we are really facing problems



Armaggedon

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Alternative: The All-Knee Theory is all you Kneed

All Cosmic Ray Spectra Features are Knees Now!

1st knee, 2nd knee, 3rd knee, etc.

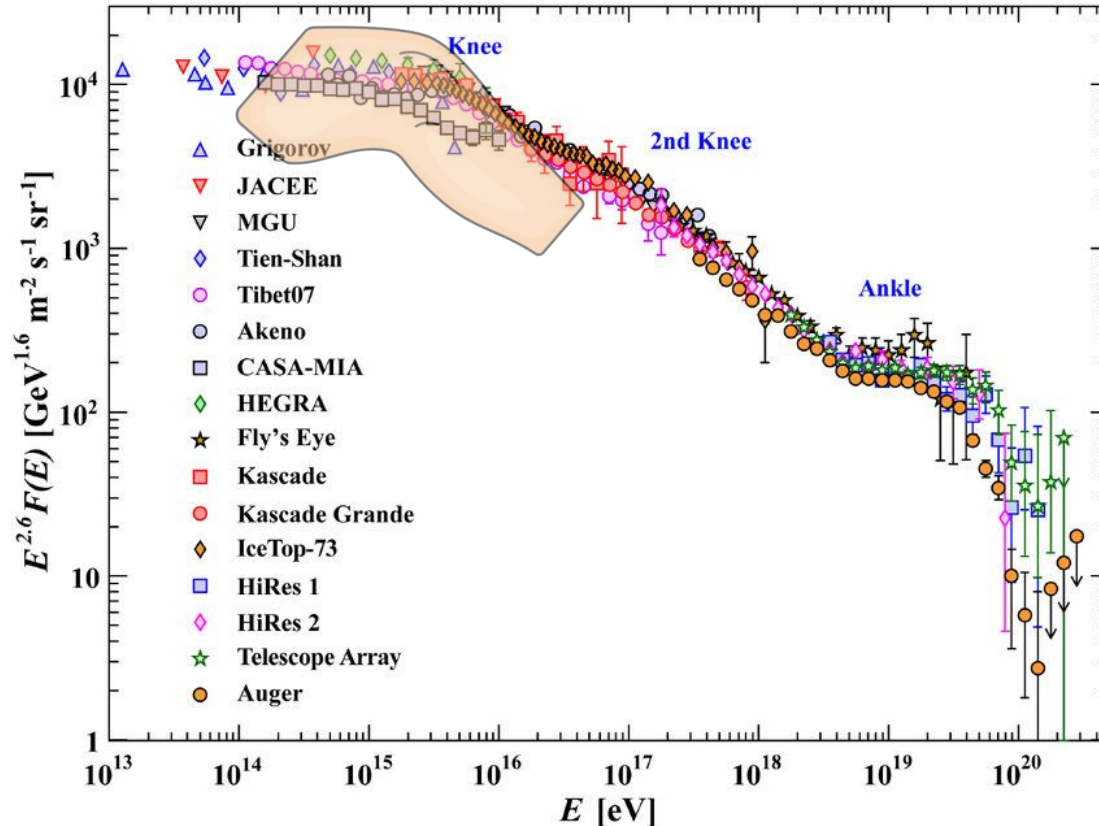
Will never need to modify anything ever again

If a new feature is discovered, it is a new knee

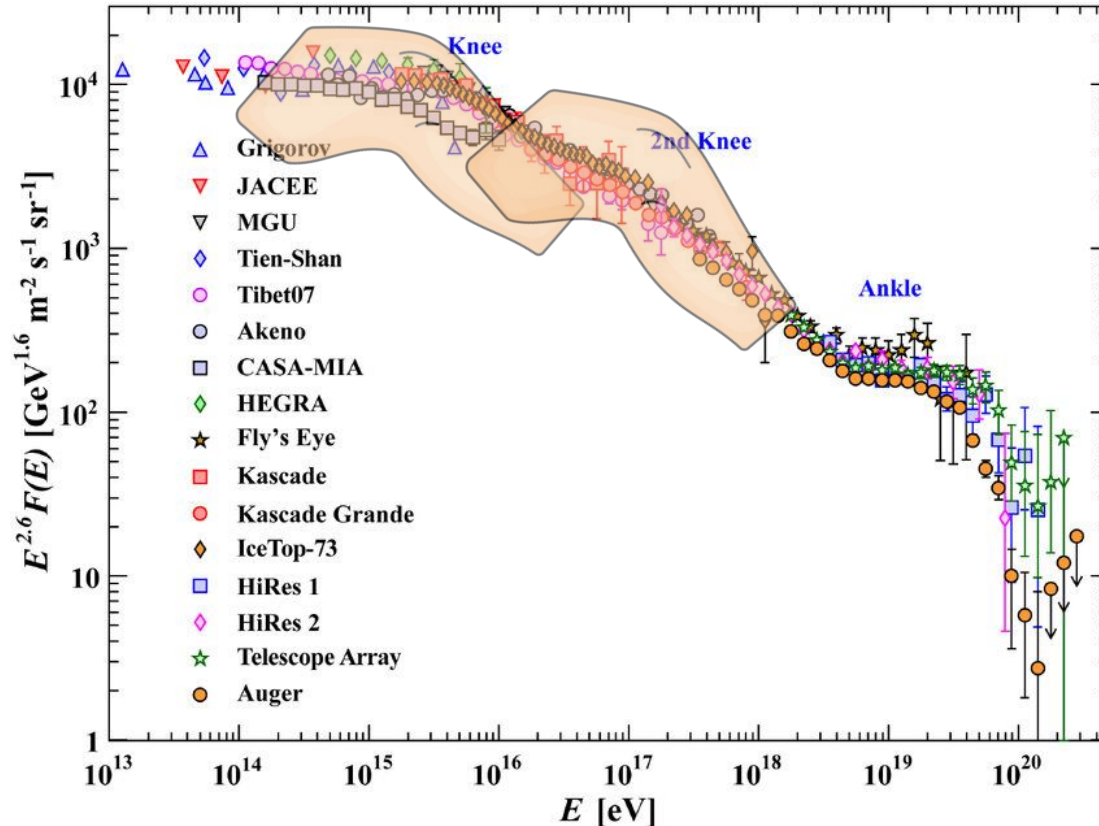
(All other knees must shift in rank to accommodate the new knee)

Theory proposed by: Fabio

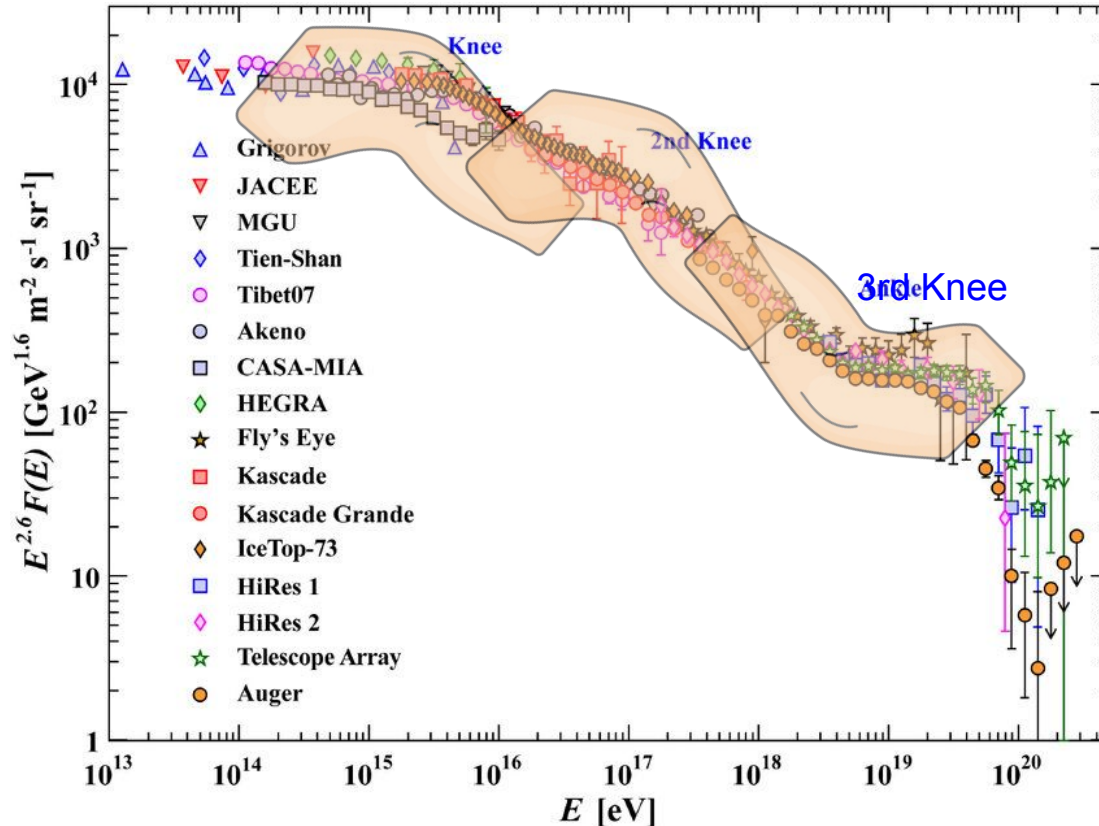
Alternative: The All-Knee Theory is all you Knead



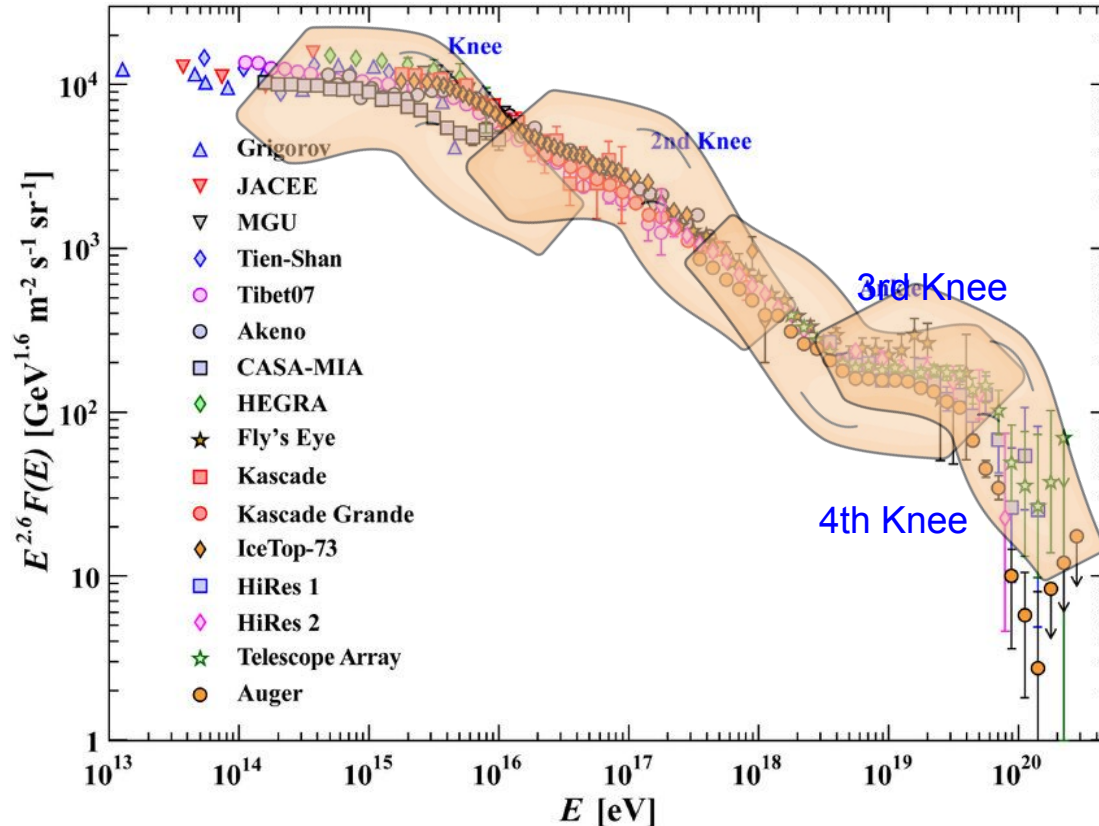
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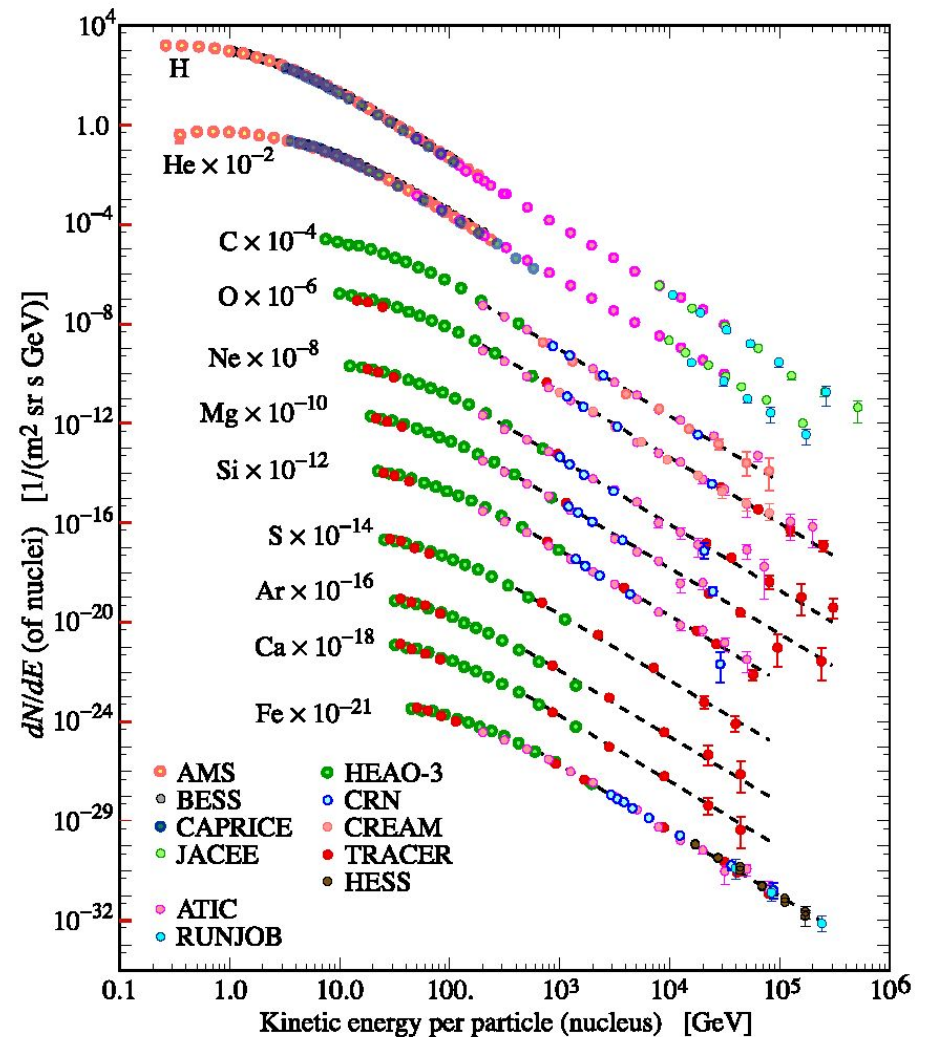
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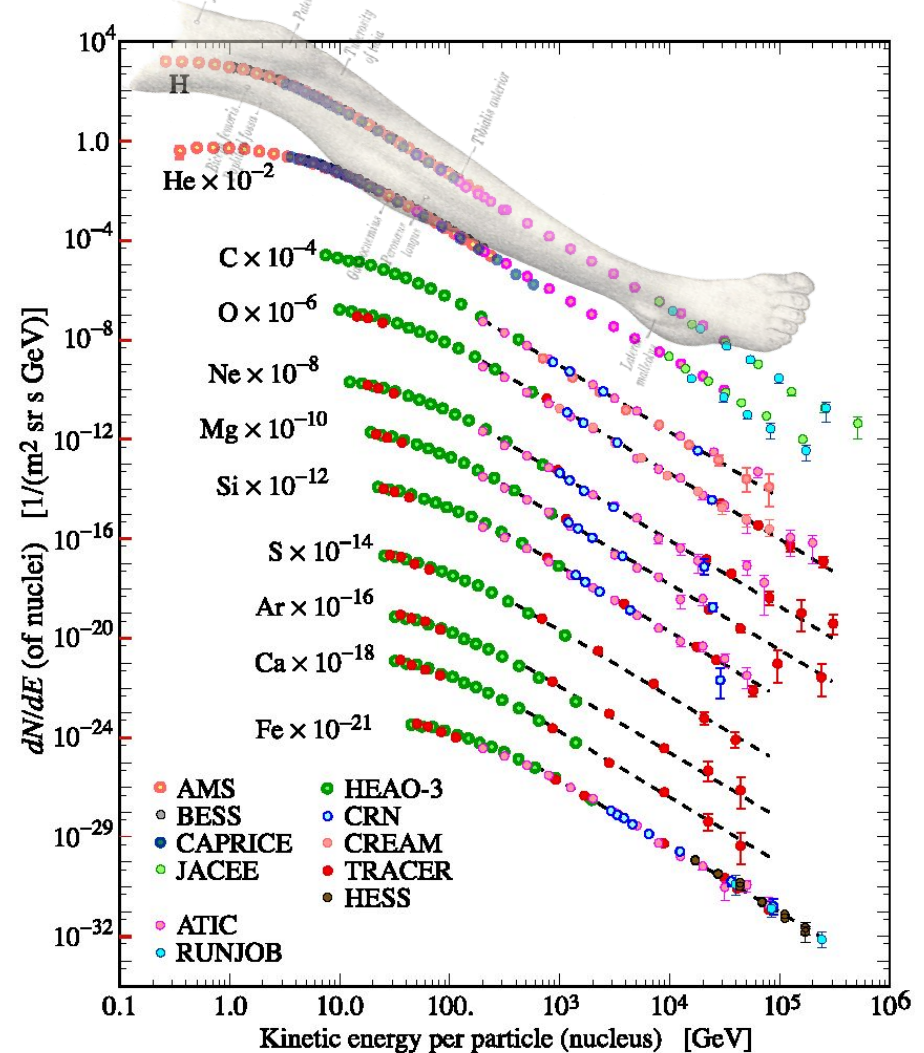
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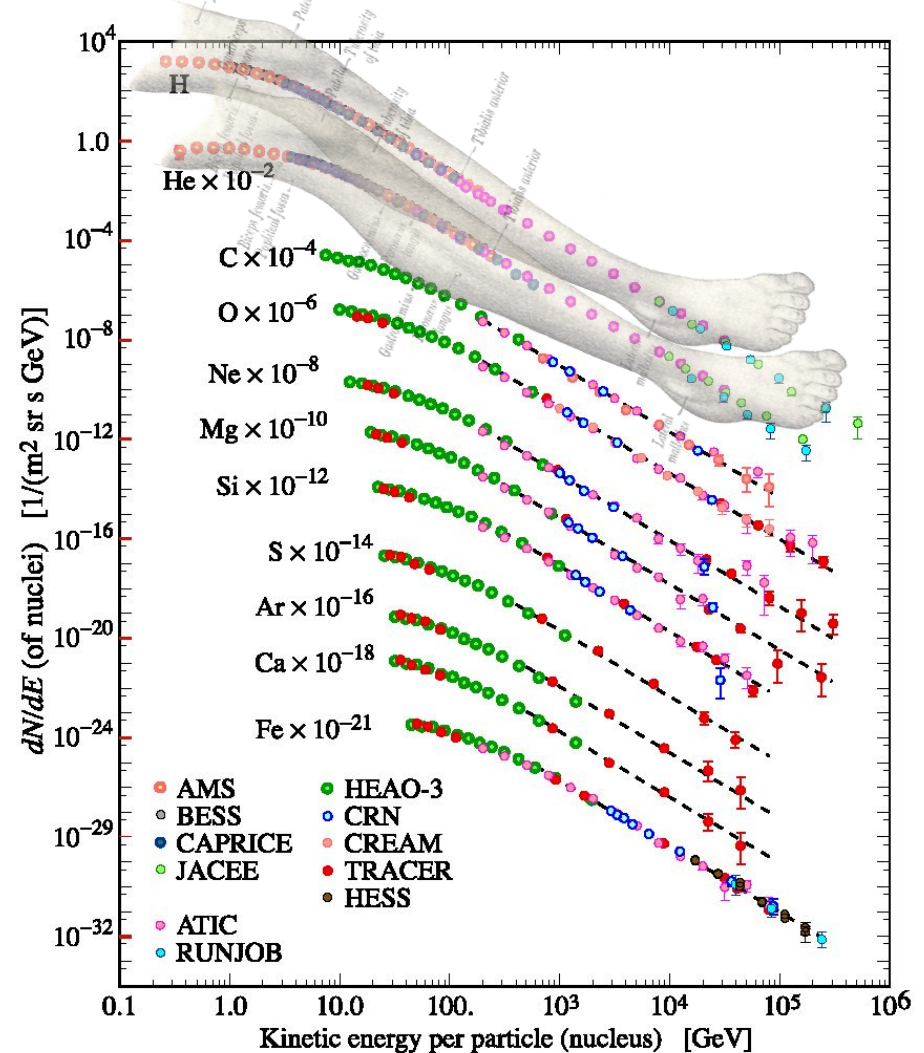
Bonus:
Superposition of different
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represented by knees!



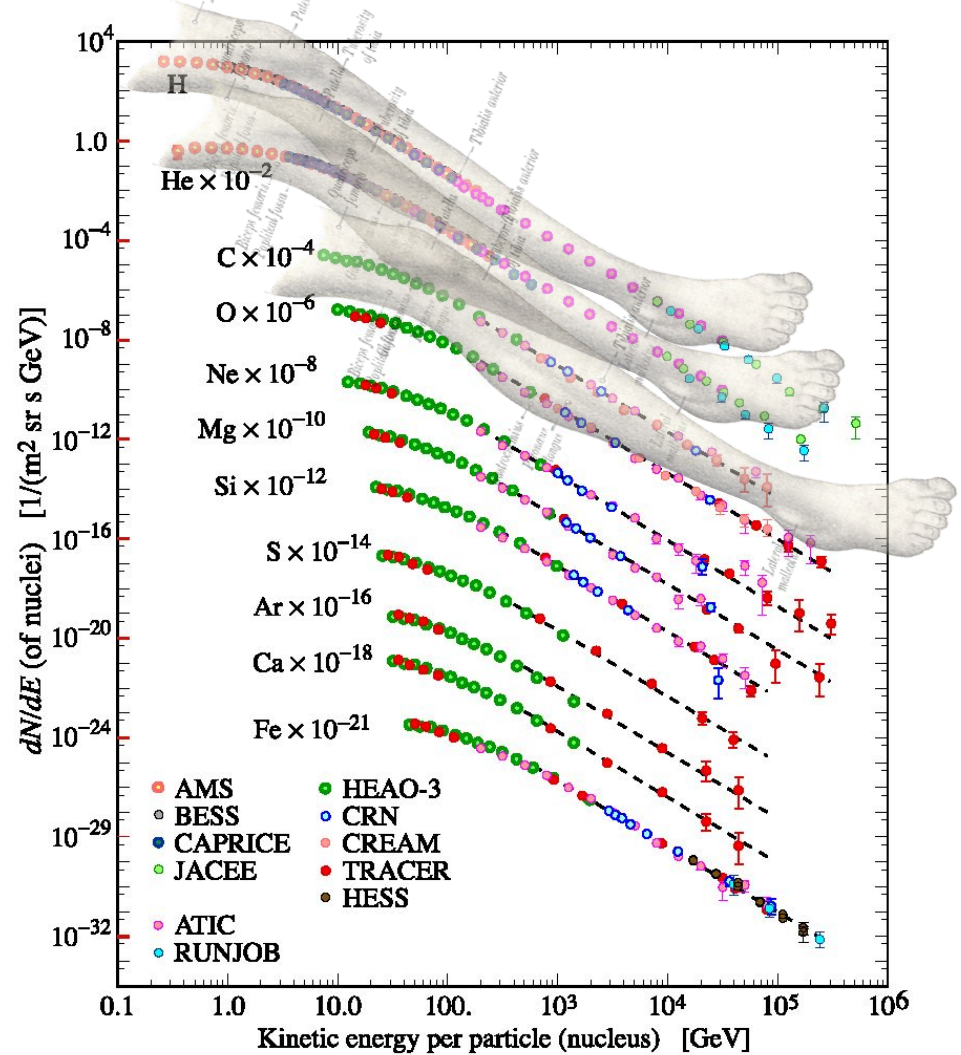
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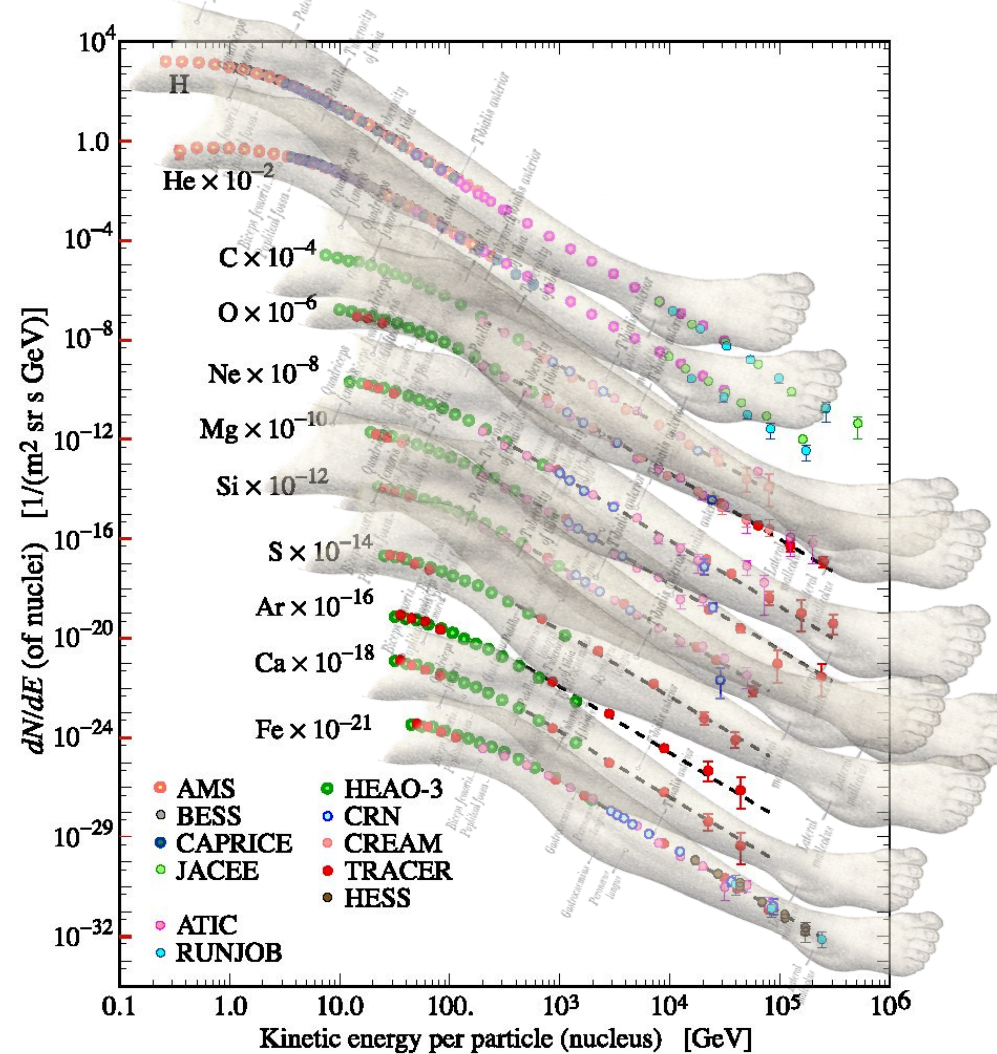
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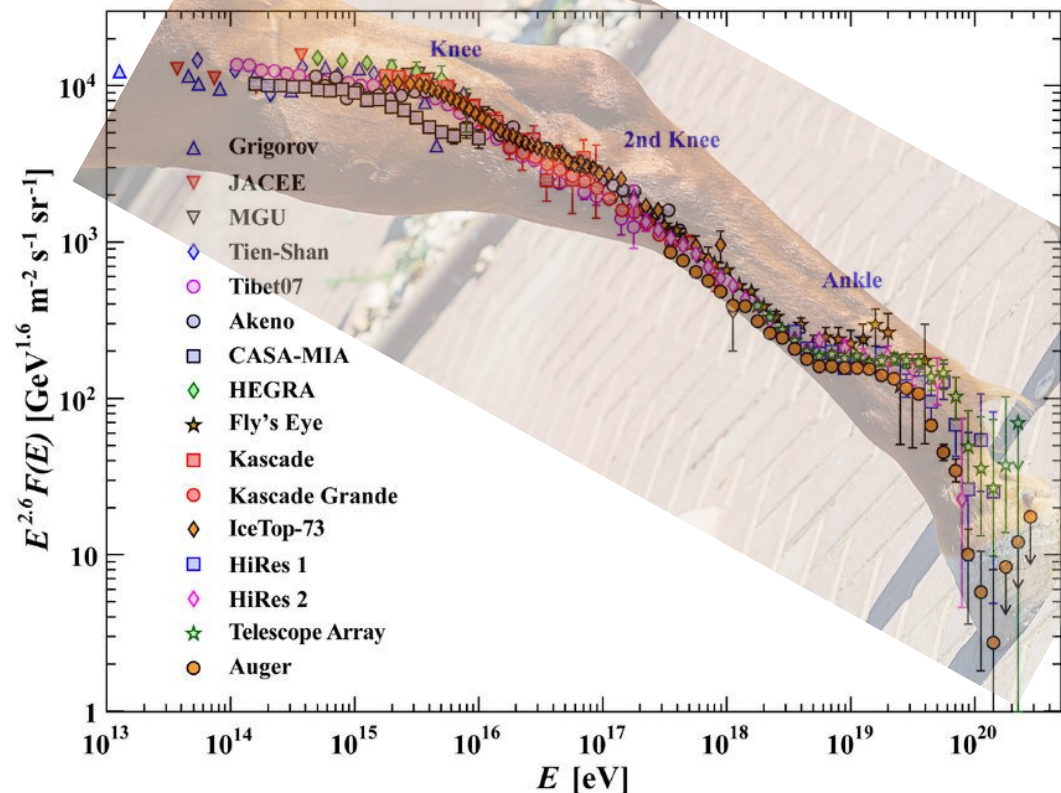


Worst Alternative: the Horse Leg

The guy who proposed this (Matteo) ate a horse for lunch and has become unreliable

This still does not really work, proportions are all wrong.

(IT DOES STILL MATCH BETTER THAN A HUMAN LEG)

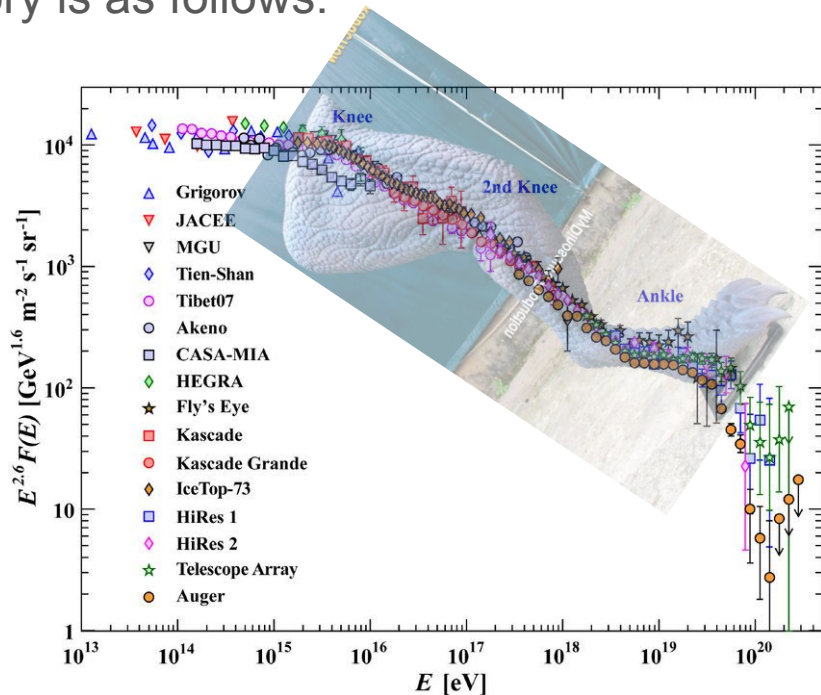
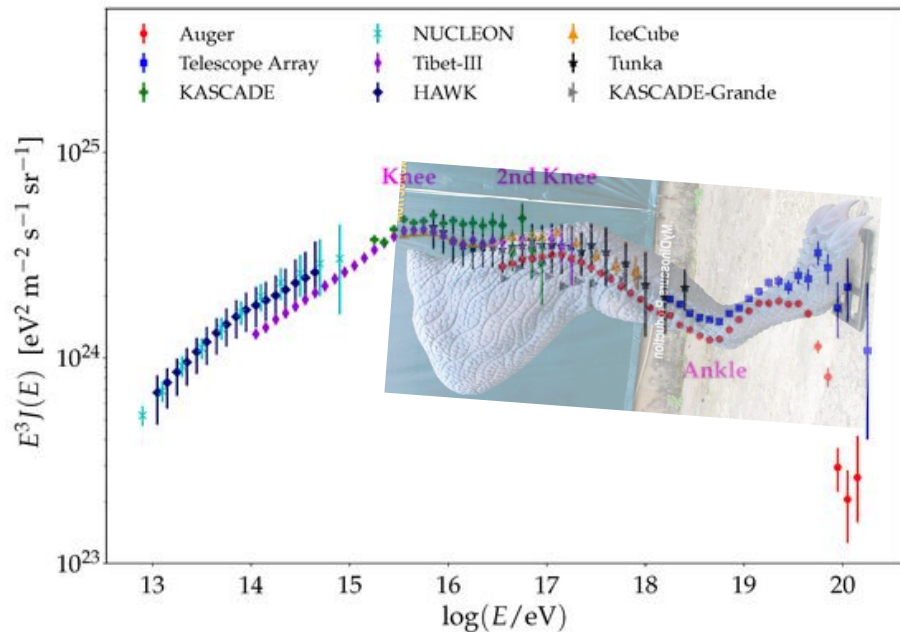


Last Alternative: the T-Rex Leg



I showed these slides to Anupama, and she agreed horse leg is ridiculous

Her clearly more anatomically significant theory is as follows:



Science Communication is Important!

We should not be limited by history's ignorance!

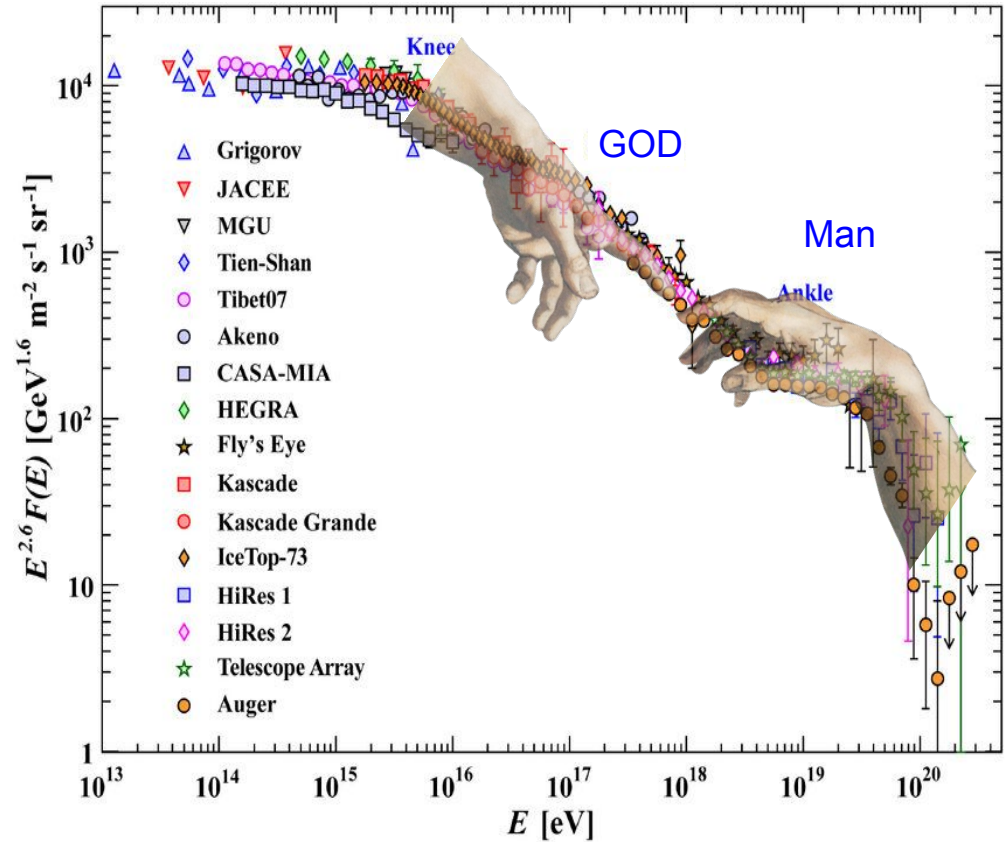
Choosing labelling that is memorable and easily demonstrable is essential

I recommend “The cosmic Ray Arm”!

Conclusion

Moving forward we should
prioritize superior nomenclature!

As a scientific community we must
agree that all publications
henceforth will use updated labels
for CR features and the future will
be better for it!



Thank you!

