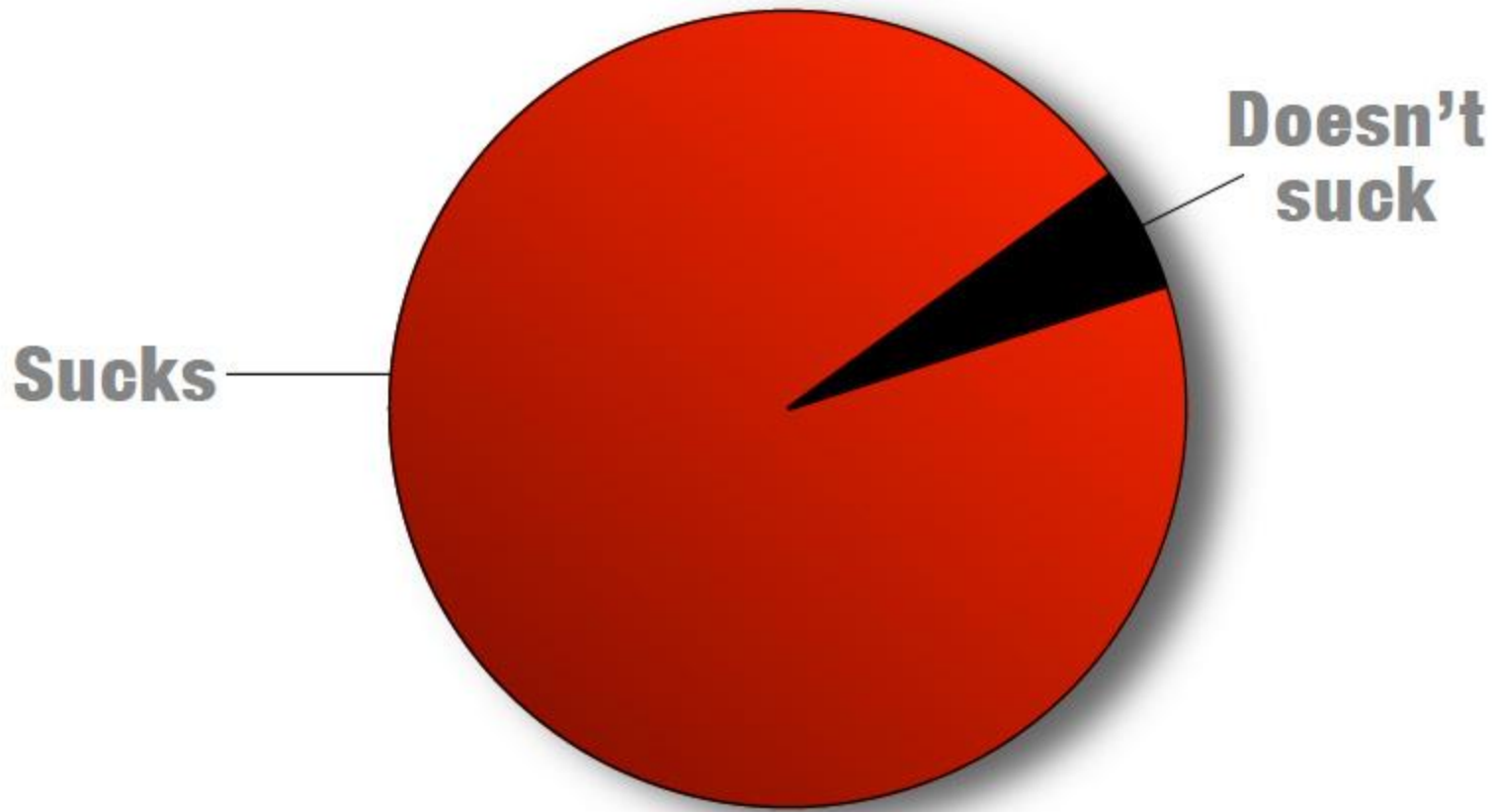


95% of presentations **SUCK**



Systematic quasi-measurement

Anforderungen an den Detektor - Energieauflösung

□ Energieauflösung zur Ladungsbestimmung nötig

□ deponierte Energie $\sim Z^2$ (Bethe-Bloch)

$$-\frac{dE}{dx} = K z^2 \frac{Z}{A} \frac{1}{\beta^2} \left[\ln \frac{2m_e c^2 \beta^2 \gamma^2 T_{max}}{I^2} - \beta^2 - \frac{\delta(\beta\gamma)}{2} \right]$$

$$\frac{\Delta E_{Z_2} - \Delta E_{Z_1}}{\Delta E_{Z_1}} = \frac{Z_2^2 - Z_1^2}{Z_1^2}$$

K $4\pi N_A r_e^2 m_e c^2$
 Z Atomic number of absorber
 A Atomic mass of absorber
 m_e Mass of an electron
 r_e Classical radius of an electron
 I Mean excitation energy
 T_{max} Maximum Kinetic energy which can be imparted to a free electron in one collision

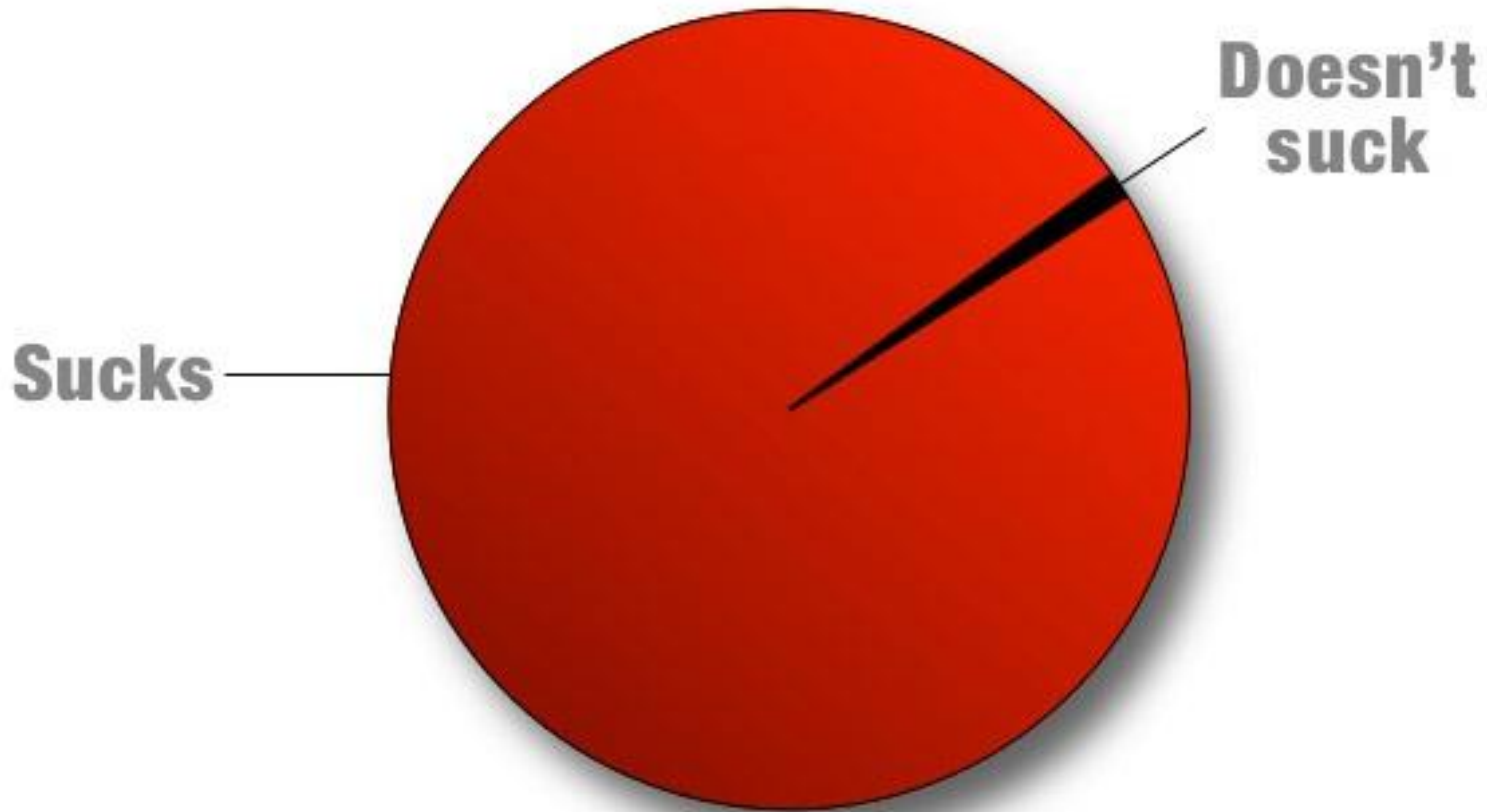
□ zwischen $Z_1=80$ und $Z_2=81$ Separation von 0.025

□ Peaks sollen mindestens durch eine Halbwertsbreite getrennt sein:

$$\sigma_Z/Z = \frac{\text{FWHM}}{2\sqrt{2 \ln 2}} \approx 0.025/2.355 = 1.04\%$$

Ok, ich übertreibe...

It's actually 99%





Was tun?

IDEEN

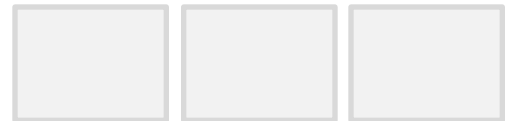
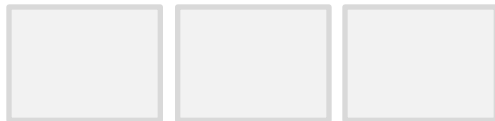
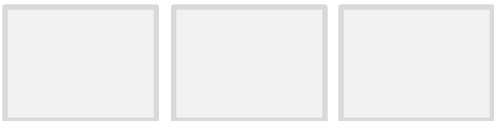
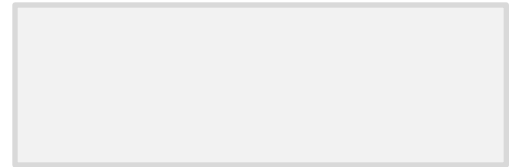
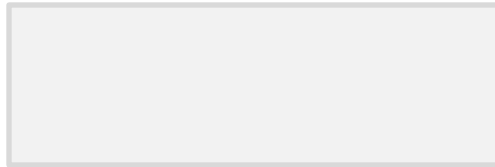
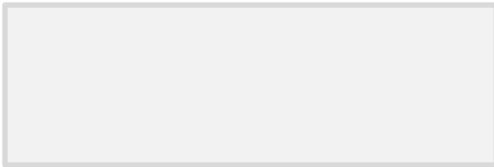


Kernbotschaft

Struktur!

Opener + Überblick

Kernbotschaften



Unterpunkte

Schluss

A black and white photograph of a path of smooth, dark stones leading across a body of water. The stones are arranged in a line that curves from the bottom right towards the top center. The water is calm, with gentle ripples around the stones. The word "STYLE" is written in large, white, sans-serif capital letters on the right side of the image.

STYLE

Inhaltsverzeichnis?

Kosmische Strahlung - Inhalt

- **Quellen**
- **Wechselwirkung**
- **Schauer**
- **KASCADE**
- **AUGER**



Schauer

Auger

KASCADE

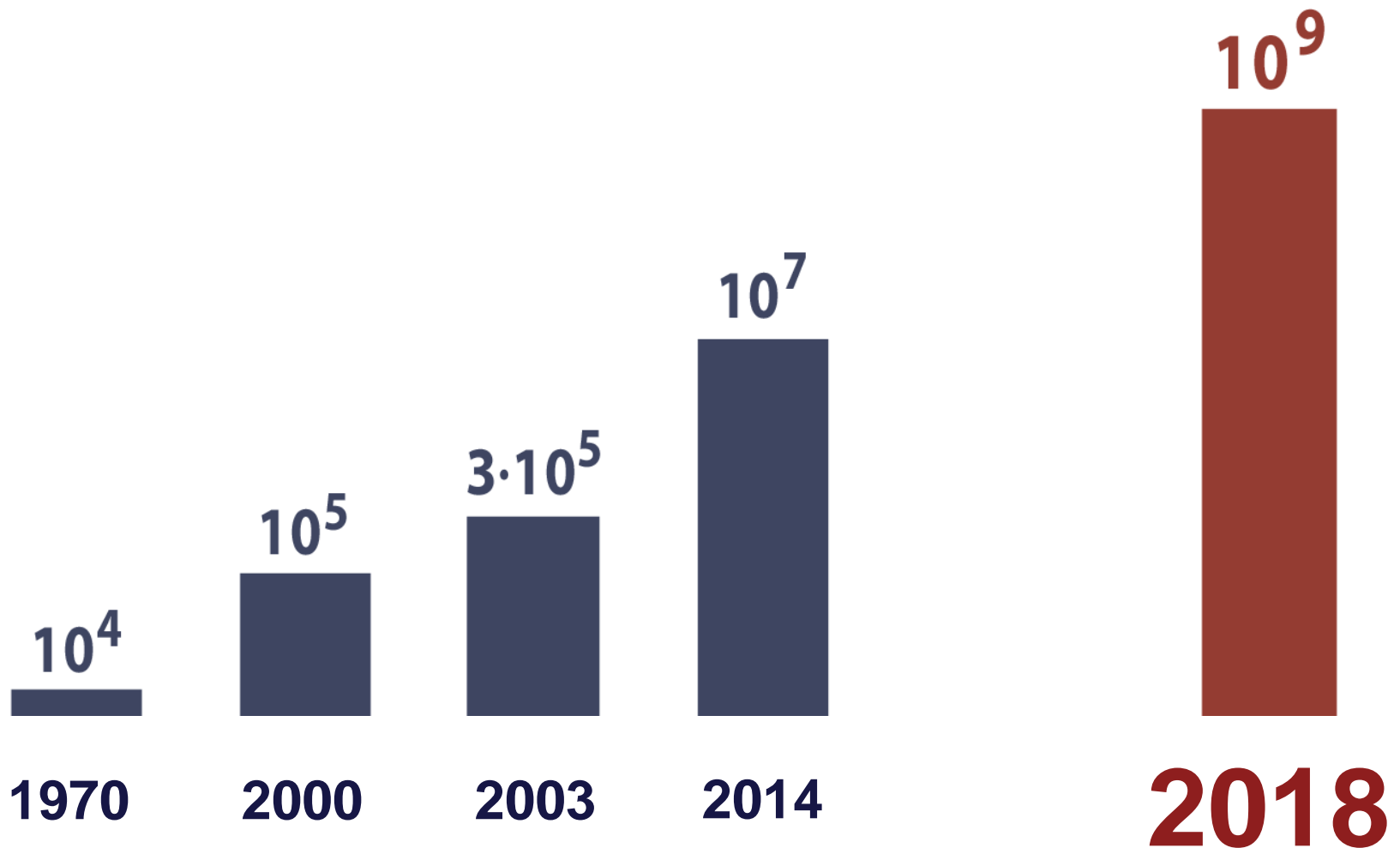
Wechselwirkung

Quellen

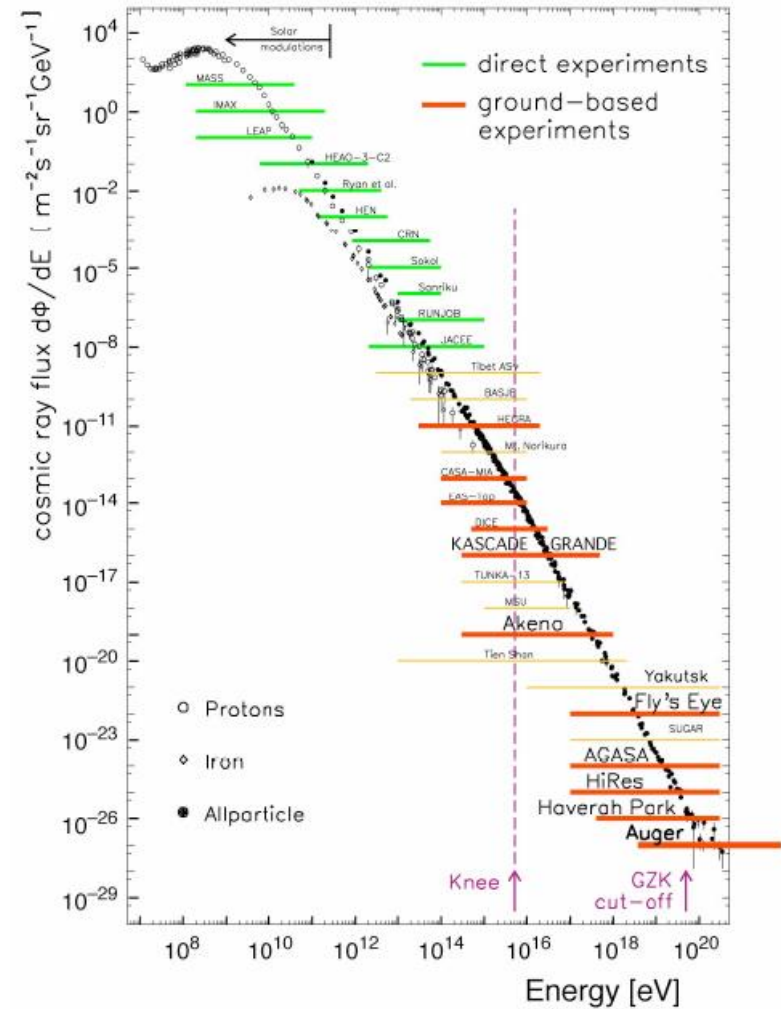
Neutronenfluss

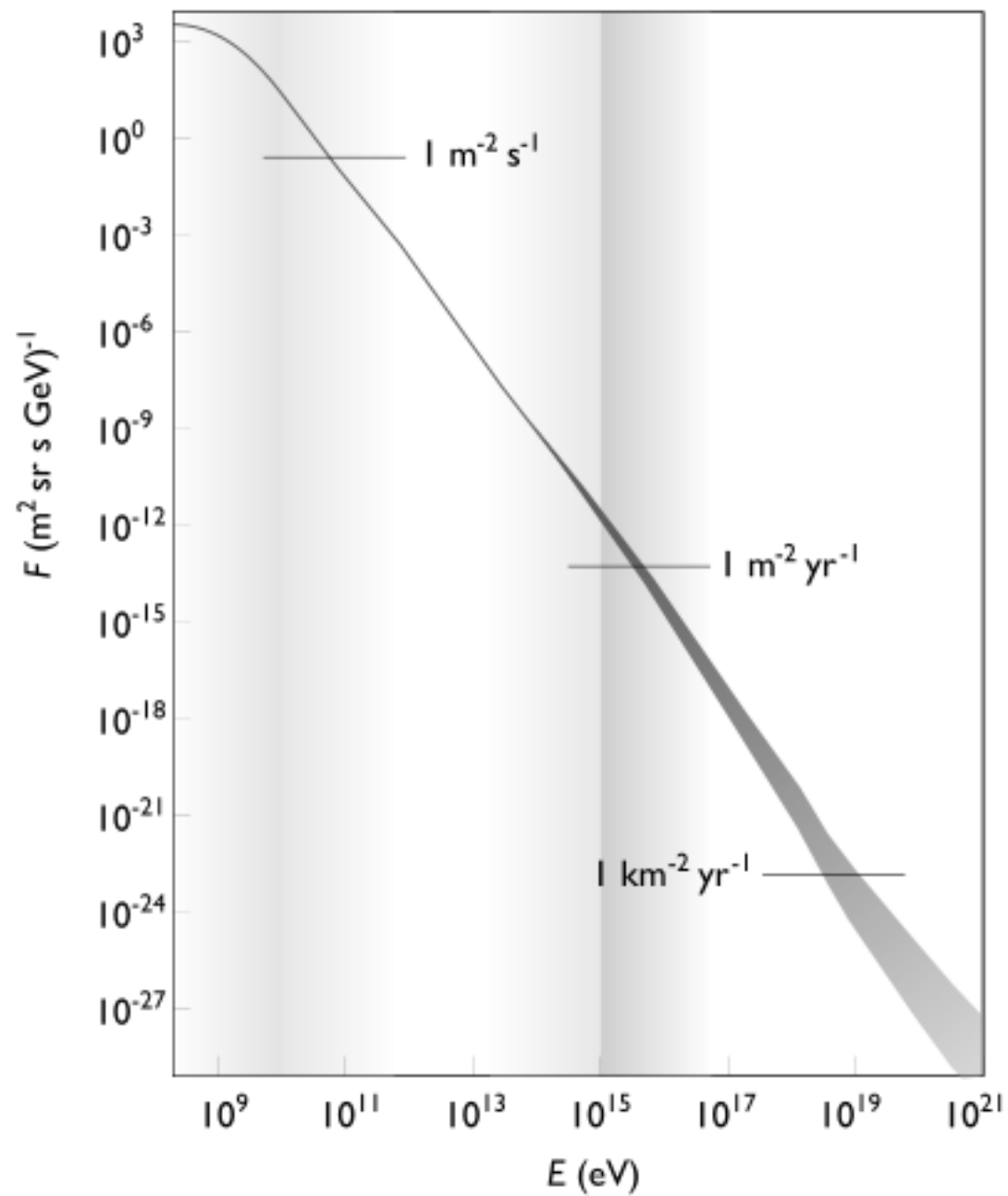
- 1970: 10^4
- 2000: 10^5
- 2003: $3 \cdot 10^5$
- 2014: 10^7
- 2018: 10^9

Neutronenfluss



Grafiken





Auf die Größe kommt es an...

Fernglas notwendig...

Adleraugen?

Dieser Text ist zu klein...

Mindestens 22 pt ...

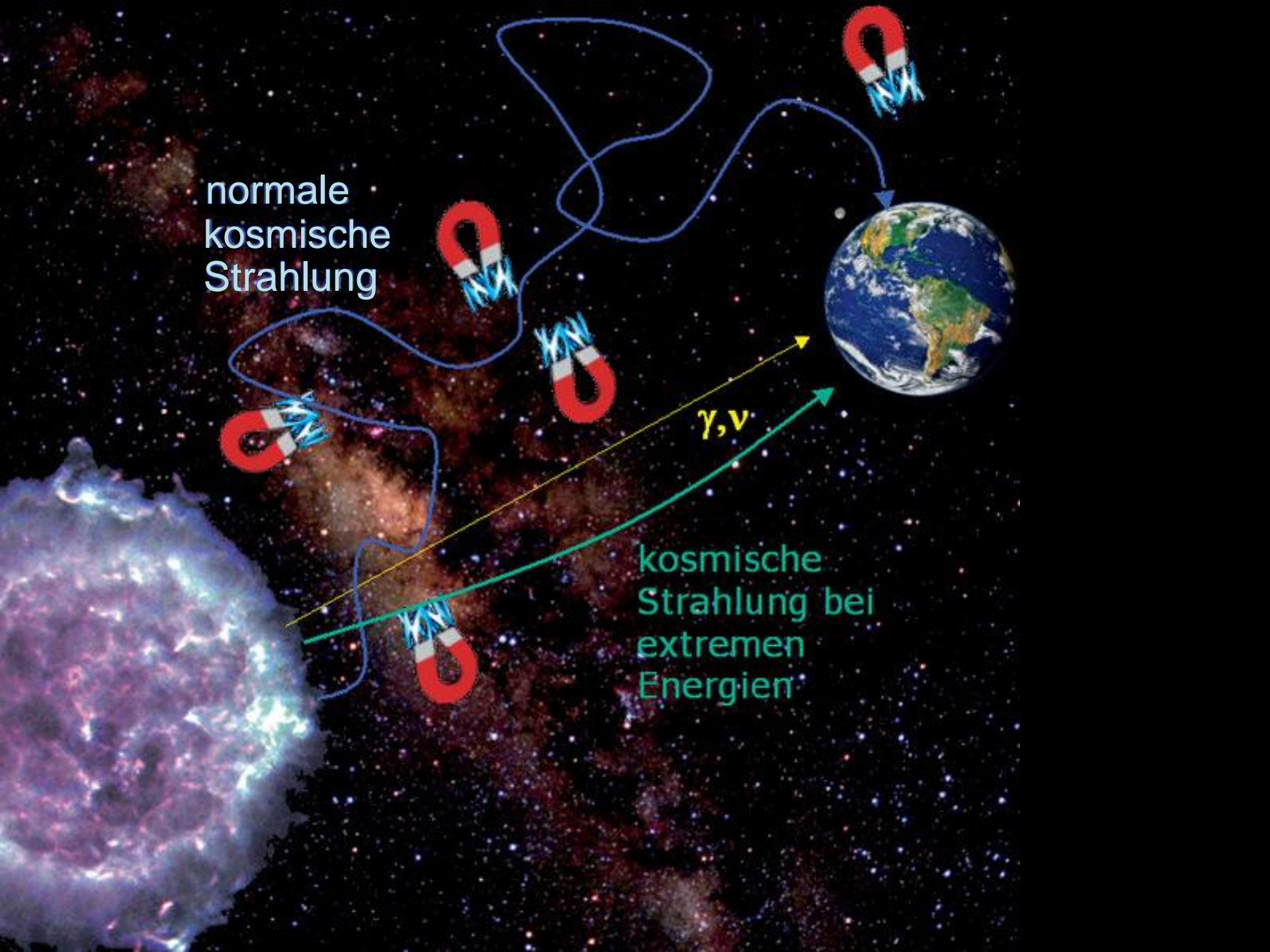
Besser keine Serifen.

Inhalt darstellen

Kosmische Strahlung - Ankunftsrichtung

- Vermessung des Teilchenschauers ermöglicht es nicht, die Quelle eines Primärteilchens zu ermitteln.
- Magnetfelder im interstellaren Raum lenken die elektrisch geladenen Teilchen von ihren Bahnen ab und verschleiern somit jegliche Richtungsinformation.
- Allenfalls bei den energiereichsten Teilchen besteht die Hoffnung, einzelne Quellen am Himmel lokalisieren zu können.

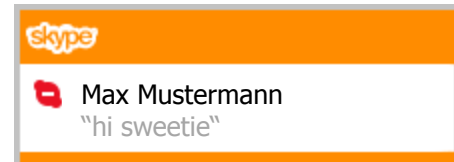
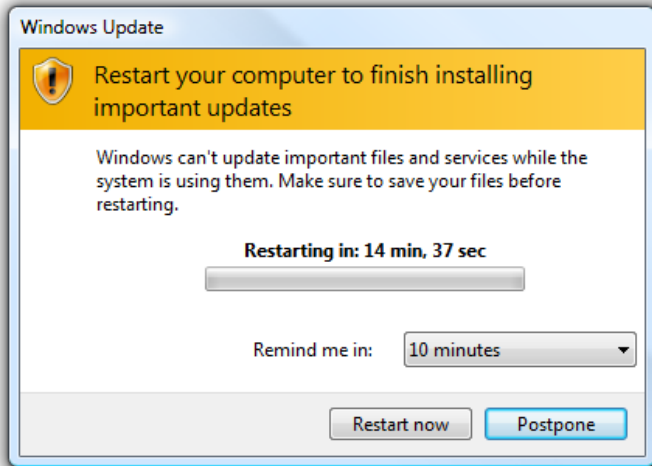
normale
kosmische
Strahlung



γ, ν

kosmische
Strahlung bei
extremen
Energien

Vor dem Vortrag...



Vor dem Vortrag...

Vor dem Vortrag...

... aufwärmen





Cooking as alchemy

In memory of chef Homaro Cantu.



Our digital lives

How social media is changing our relationships



20 most popular talks of all time

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Takaharu Tezuka

The best kindergarten you've ever seen



Kailash Satyarthi

How to make peace? Get angry



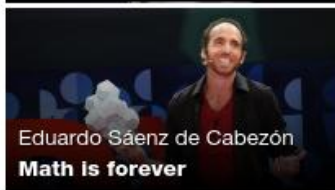
Fred Jansen

How to land on a comet



Dan Ariely

How equal do we want the world to be? You'd be surprised



Eduardo Sáenz de Cabezón

Math is forever



Barat Ali Batoor

My desperate journey with a human smuggler



Bel Pesce

5 ways to kill your dreams



JUST DO IT.



Wir freuen uns auf Sie!



Wir freuen uns auf Sie!