White dwarf pulsar as Possible Cosmic Ray Electron-Positron Factories

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http://www.nasa.gov/centers/goddard/news/topstory/2007/whitedwarf_pulsar.html

Background:"Electron-Positron Excess"

PAMELA

(capable of identifying CR ray charge)

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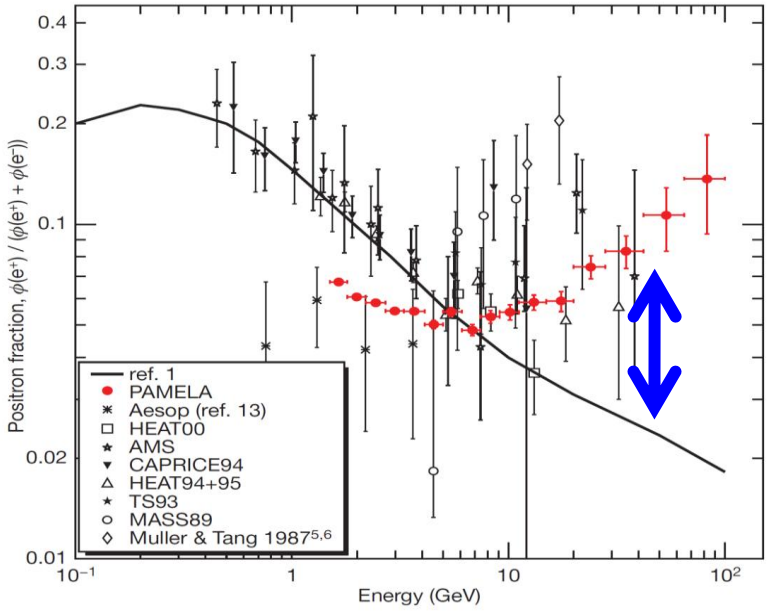
The positron excess in
the energy range 10-100GeV

(Adriani, et al 2008)

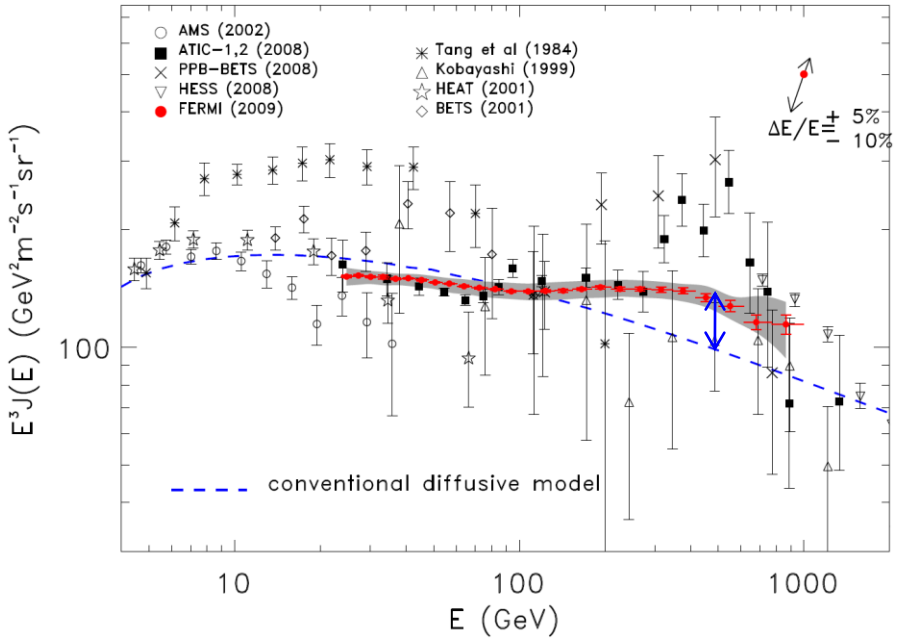


ATIC/PPT-BETS/H.E.S.S/Fermi

⇩

The excess in
the $e^- + e^+$ flux up to TeV

(Abdo, et al 2009 etc)



What is the source?

- **Neutron star pulsar?**

Shen 70; Aharonian+ 95; Atoyan et al. 95; Chi+ 96; Zhang & Cheng 01; Grimani 07; Yuksel+ 08; Buesching+ 08; Hooper+ 08; Profumo 08; Malyshev+09; Grasso+ 09; Kawanaka, Ioka & Nojiri 10

- **Supernova Remnant ?**

Shen & Berkey 68; Pohl & Esposito 98; Kobayashi+ 04; Shaviv+ 09; Hu+ 09; Fujita, Kohri, Yamazaki & Ioka 09; Blasi 09; Blasi & Serpico 09; Mertsch&Sarkar 09; Biermann+ 09; Ahlers, Mertsch & Sarkar 09

- **Microquasar (Galactic BH) ?** Heinz & Sunyaev 02

- **Gamma-Ray Burst ?** Ioka 10

- **Propagation Effect ?** Delahaye+ 08; Cowsik & Burch 09; Stawarz+09; Schlickeiser & Ruppel 09

- **Dark matter decay or annihilation ???** So many references

High accuracy, broadband CR e± observations are coming.
ex) AMS-02, CALET, CTA

Is there any new sources?

Goal

We propose "White Dwarf Pulsars"
as a new candidate for TeV $e^{\pm}$ emitters,
and discuss the possibility of the detection
by PAMELA/Fermi or the future observations
like AMS-02/CALET/CTA.