



# Dan žena u astronomiji

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# Šta?

- Daleka infracrvena-radio korelacija (FIR-radio korelacija)
- Odstupanje od korelacije
- Ispitivanje FIR-radio korelacije u odnosu na morfologiju galaksija

An astronaut in a white spacesuit is floating in space against a dark blue background with stars. The astronaut is positioned in the upper left corner of the slide.

# FIR-radio korelacija

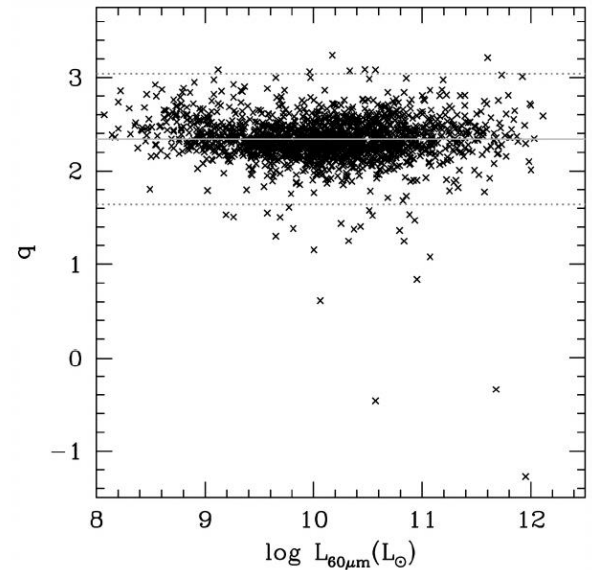
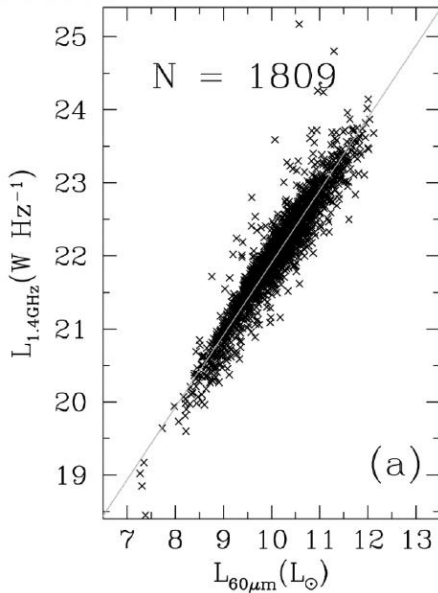
- Luminoznost dalekog (42 $\mu$ m-122 $\mu$ m) infracrvenog zračenja VS radio (1,4 GHz) luminoznost =  
FIR-radio korelacija

$$q_{FIR} = \log\left(\frac{FIR}{3.75 \times 10^{12} \text{Wm}^{-2}}\right) - \log\left(\frac{S_{1.4\text{GHz}}}{\text{Wm}^{-2}\text{Hz}^{-1}}\right)$$

# Posmatranje FIR-radio korelacije

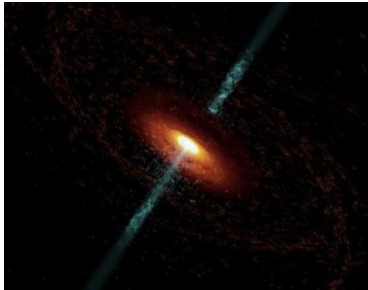
- Lisenfeld et al. 2015

$$q_{FIR} = 2.34 \pm 0.01$$



# Uzrok i primene

- Infracrveno zračenje (termalno)
- Radio zračenje (netermalno)
- Uzrok: Masivne zvezde!



AGN 3C 120

- Primene:
  - SFR (*eng: Star Formation Rate*)
  - AGN (*eng: Active Galaktic Nuclei*)
  - Udaljenost do galaksija
  - Temperatura prašine SMG galaksija

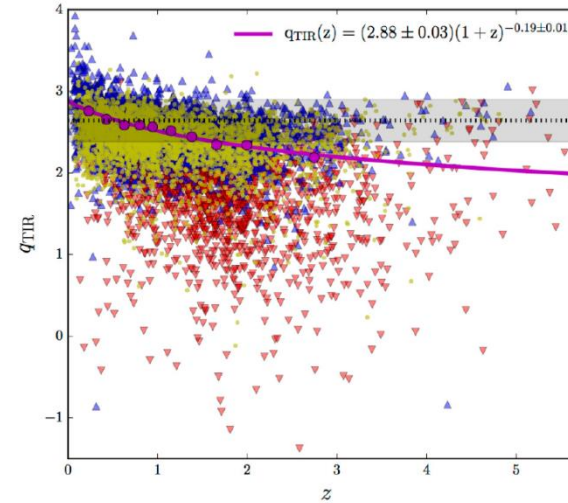
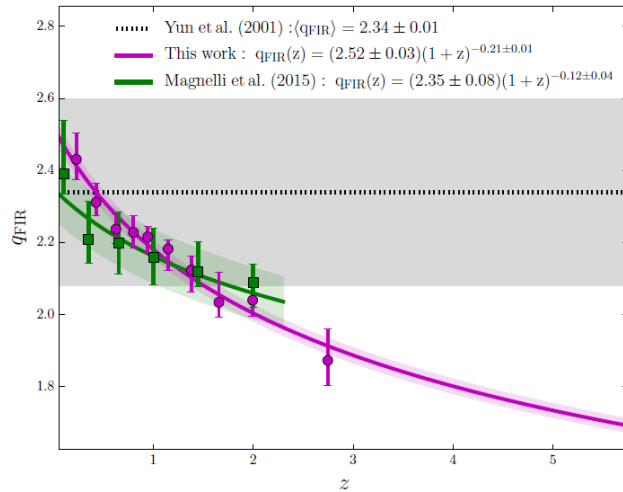


# Odstupanje od korelacije

- AGN, patuljaste galaksije, mala metaličnost
- Sistemi u interakciji (Donevski & Prodanovic 2015)

# Odstupanje od korelacije

- Delhaize et al. 2017.
- 12 333 SMG galaksija

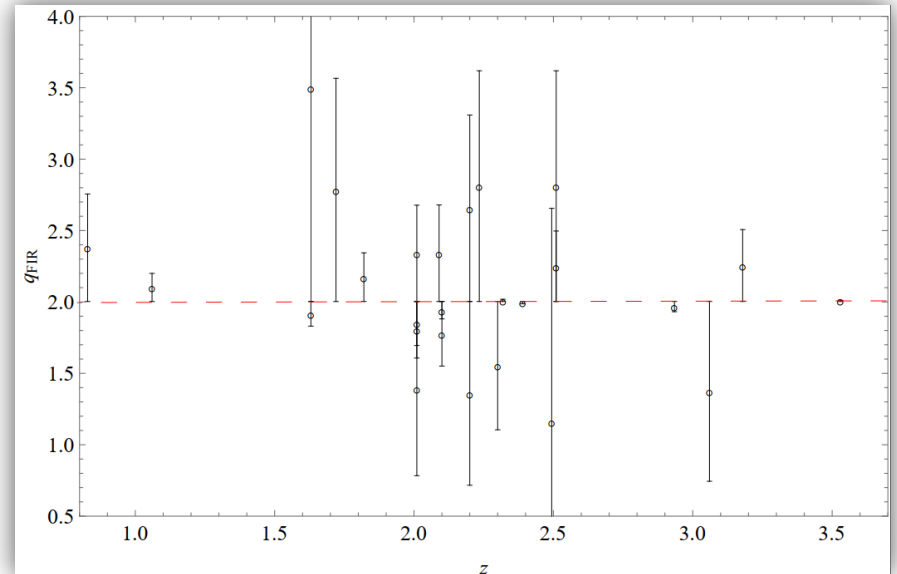
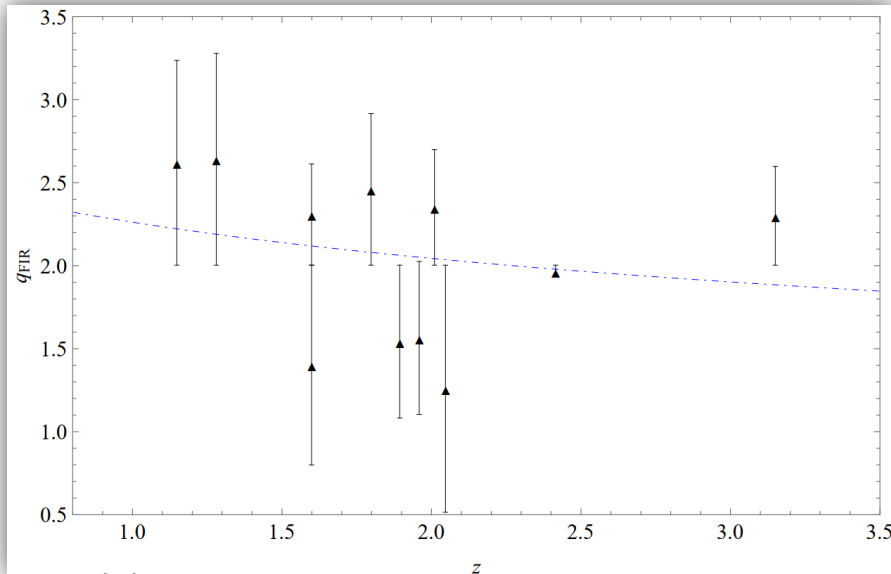


# FIR-radio korelacija i morfologija galaksija

- 37 galaksija
- 11 nepravilnih, 26 diskolikh

$$q_{FIR} = (2.69 \pm 0.95)(1+z)^{-(0.25 \pm 0.29)}$$

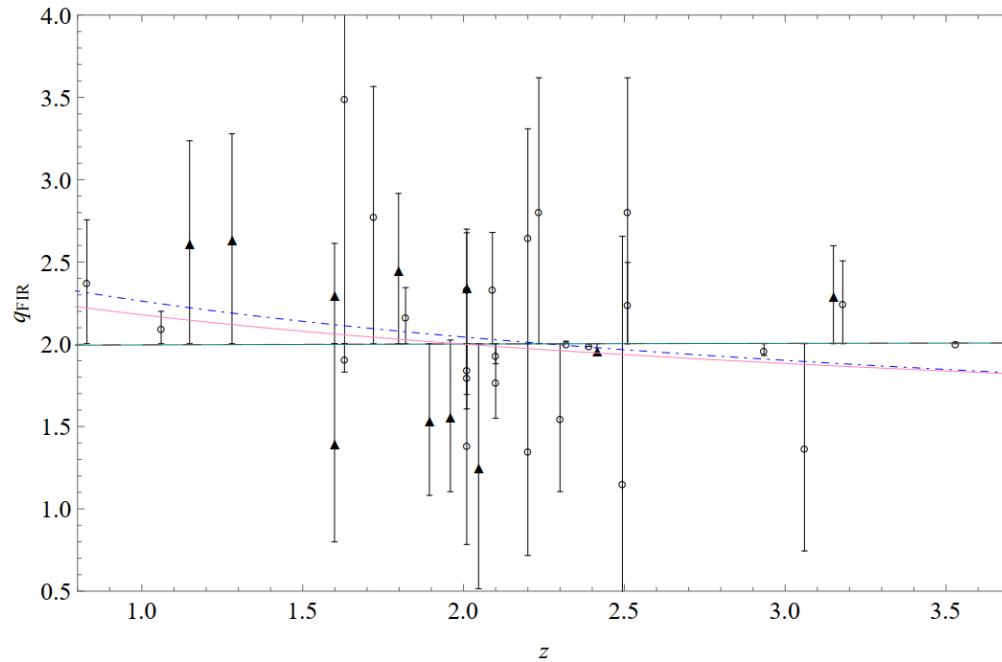
$$q_{FIR} = (1.98 \pm 0.03)(1+z)^{(0.01 \pm 0.01)}$$





# FIR-radio korelacija i morfologija galaksija

$$q_{FIR} = (1.99 \pm 0.03)(1 + z)^{(0.01 \pm 0.01)}$$



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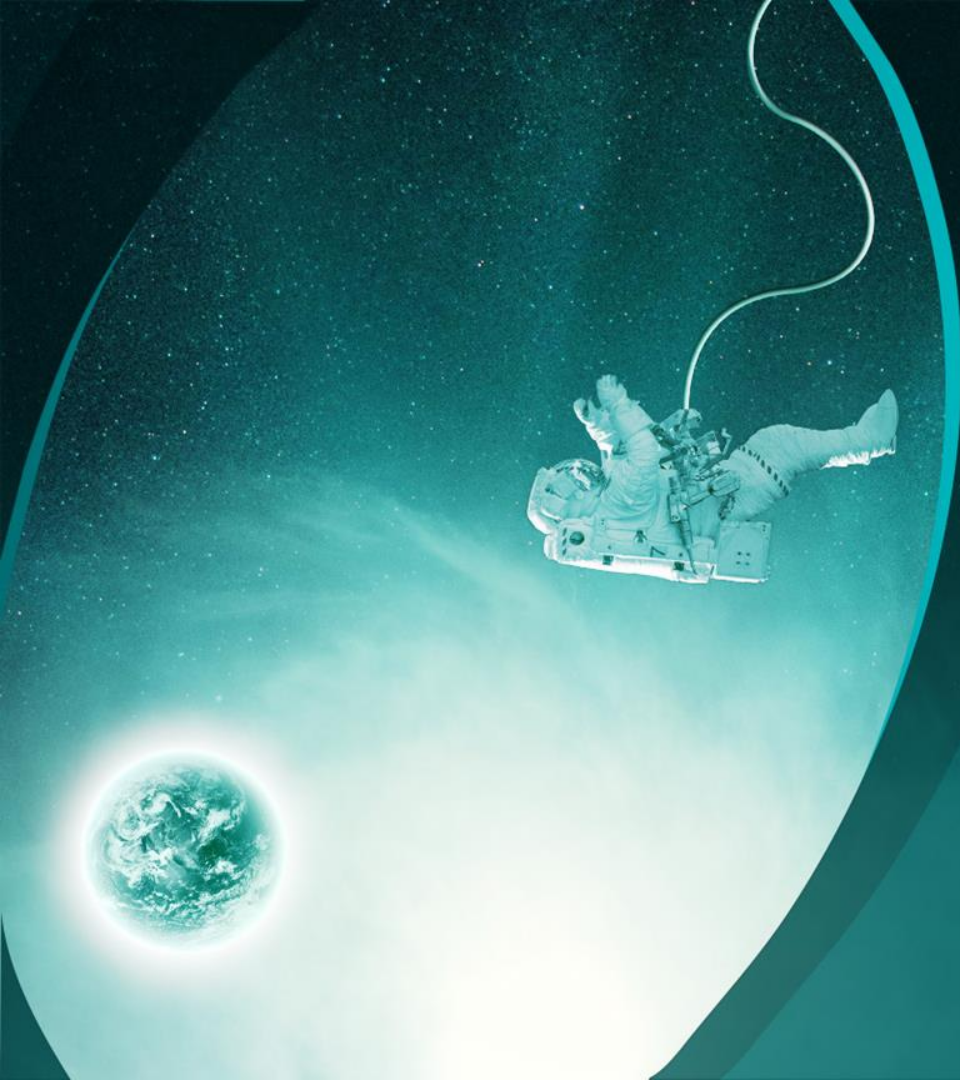
# Da sumiramo!

- FIR-radio korelacija linearna u lokalnom univerzumu
- Odstupanje od linearnosti:
  - Patuljaste galaksije
  - AGN
  - Interakcija!
- Korelacija VS morfologija
- Indikacija da morfologija diktira oblik zavisnosti  $q_{FIR}(z)$

# Društva za popularizaciju nauke



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Hvala na pažnji!