

Čega sve ima u prostoru između zvijezda u Mliječnoj stazi ?

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Projekt UP.04.2.1.10.0163. Jačanje kapaciteta HZI za provođenje STEM programa u radu s mladima

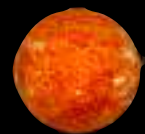


Sadržaj ove prezentacije isključiva je odgovornost Korisnika i partnera.

Mliječna staza



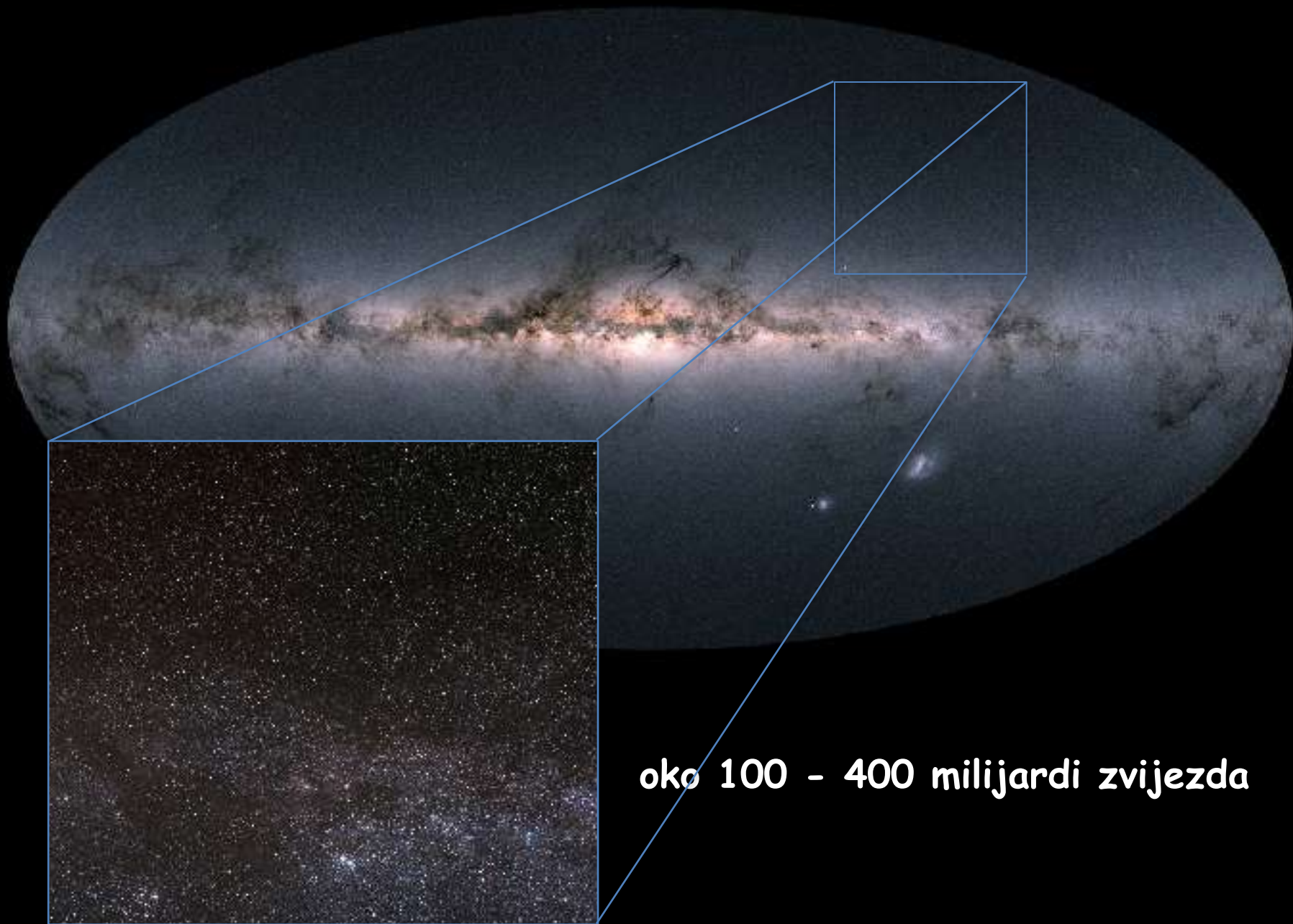
Izvor: astrobobo



SUNČEV SUSTAV

SUPERMASIVNA CRNA RUPA
4 000 000 $M_{\odot}$





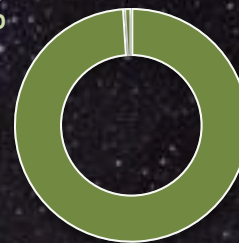
oko 100 - 400 milijardi zvijezda

MLIJEČNA STAZA

$\sim 10^{12} M_{\odot}$

Prašina

1%



Međuzvjezdana tvar

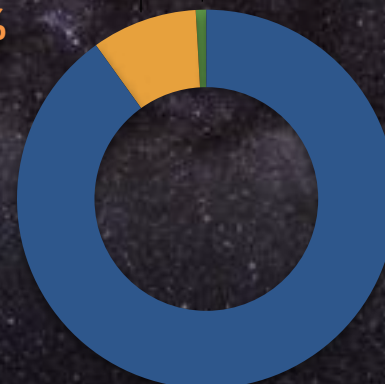
1%

Međuzvjezdani plin

99%

Zvijezde

9%



Teži elementi

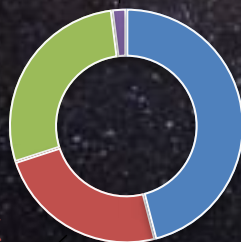
2%

He

28%

Atomi vodika

46%



Molekularni vodik

24%

Tamna materija

90%



VELIKI MOLEKULARNI OBLAK

(71.1% H, 27.4% He i 1.5% ostali elementi)

prije 4.6 milijardi godina





Ruder Bošković Institute



Andrea Bracco



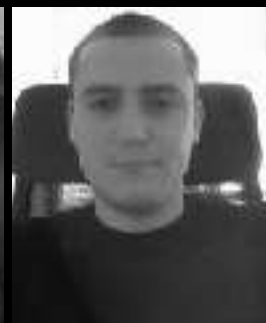
Lana Ceraj



Ana Erceg



Iva Šnidarić



Luka Turić



Lovorka Gajović



Barbara Šiljeg



magnetska polja

paučasta međuzvezdana materija

10 - 100 trilijona puta rjeđa od zraka

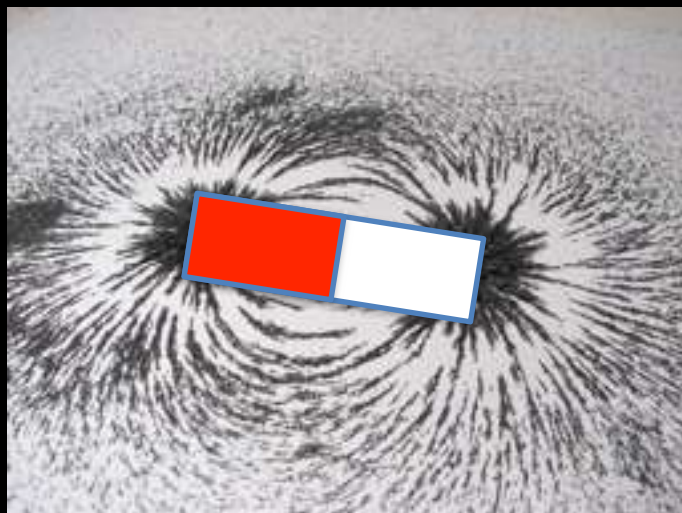
Vruća ionizirana tvar, oko 1 000 000 K, 0.01 cm^{-3}

Topla ionizirana tvar, oko 5 000 K, $0.1-1 \text{ cm}^{-3}$

Topla neutralna tvar, oko 5 000 K, $0.1-1 \text{ cm}^{-3}$

Hladna neutralna materija, oko 100 K, 100 cm^{-3}

Molekularni oblaci, oko 10 K, $1 000 \text{ cm}^{-3}$







Milky Way • Gamma Rays
Fermi/NASA

This panel shows the Milky Way galaxy as a bright, horizontal band of gamma-ray emission against a dark blue background. The emission is concentrated along the galactic plane, with several distinct, bright spots representing individual sources or regions of high-energy activity.



Milky Way • X-Rays
ROSAT All Sky Survey

This panel displays the Milky Way in the X-ray spectrum, appearing as a greenish-yellow band. The emission is more diffuse and widespread than in the gamma-ray band, with some brighter regions indicating areas of intense X-ray activity, such as the galactic core.



Milky Way • Visible Light
DS2/2WIKISKY

This panel shows the Milky Way in the visible light spectrum, appearing as a dark, dusty band with scattered stars. The dust is visible as dark, irregular patches and clumps, while the stars appear as small, bright white and blue points of light.



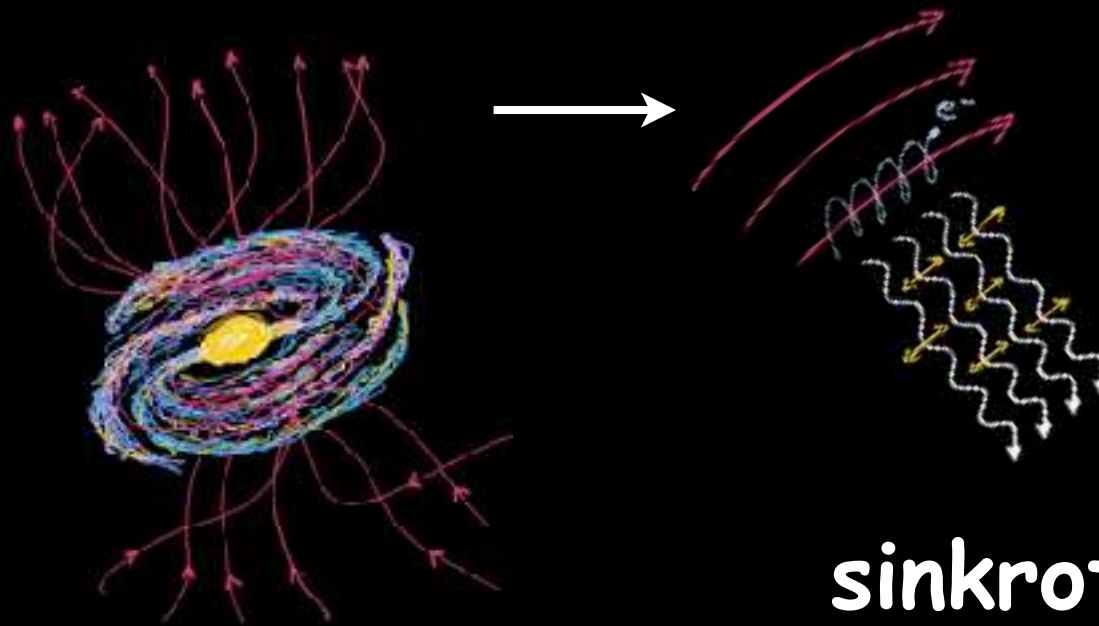
Milky Way • Infrared
IRAS/NASA

This panel shows the Milky Way in the infrared spectrum, appearing as a bright, orange-red band. The emission is more uniform and widespread than in the visible light band, with some brighter regions indicating areas of intense infrared activity, such as the galactic core.

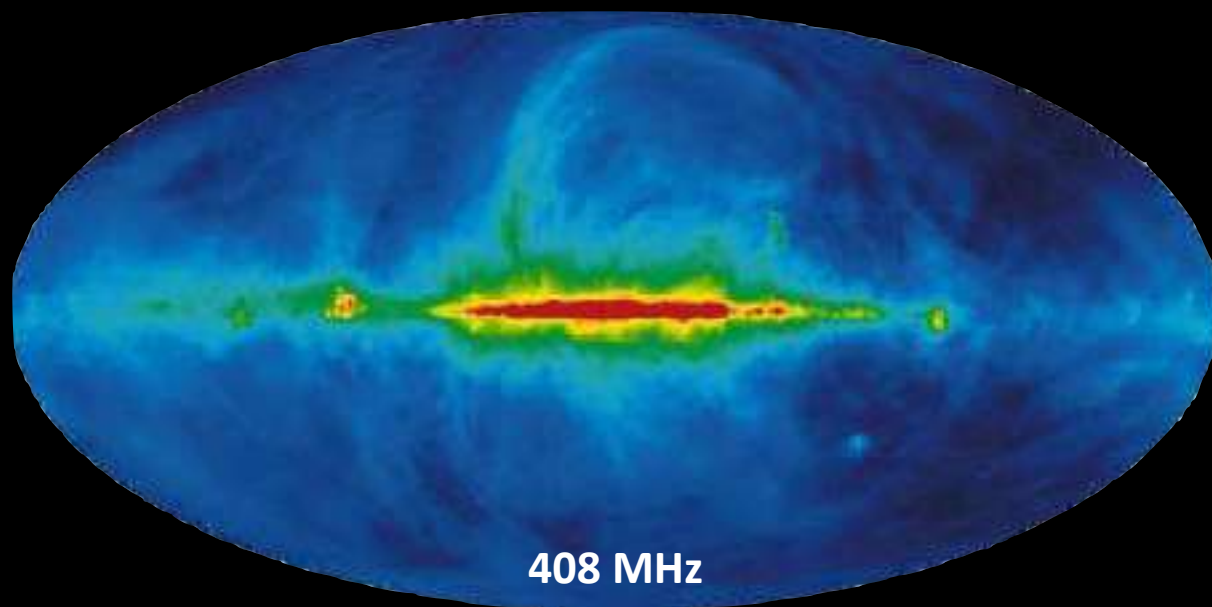


Milky Way • Radio
Haslam et al

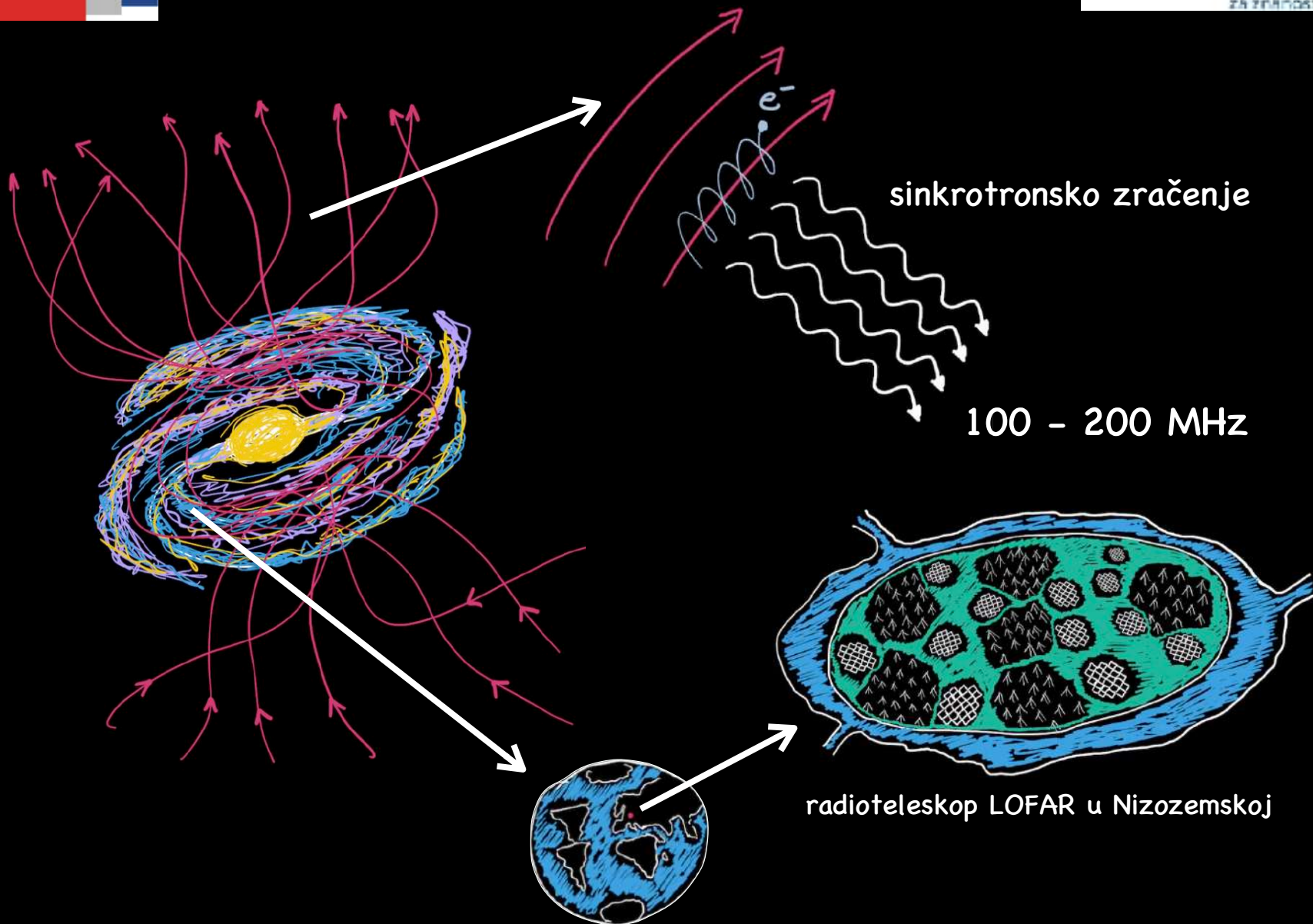
This panel shows the Milky Way in the radio spectrum, appearing as a bright, magenta band. The emission is more uniform and widespread than in the infrared band, with some brighter regions indicating areas of intense radio activity, such as the galactic core.



**sinkrotronsko
zračenje**



408 MHz

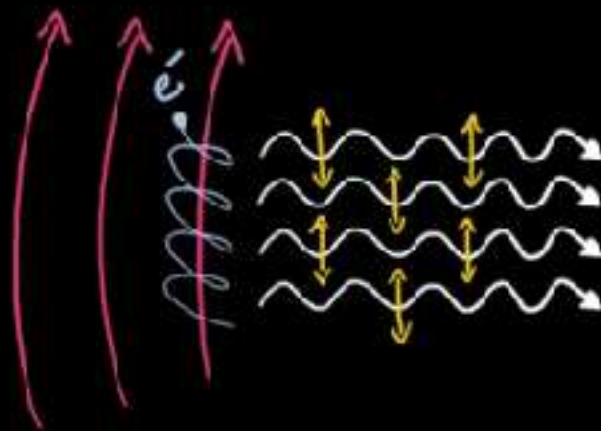


Radioteleskop LOFAR

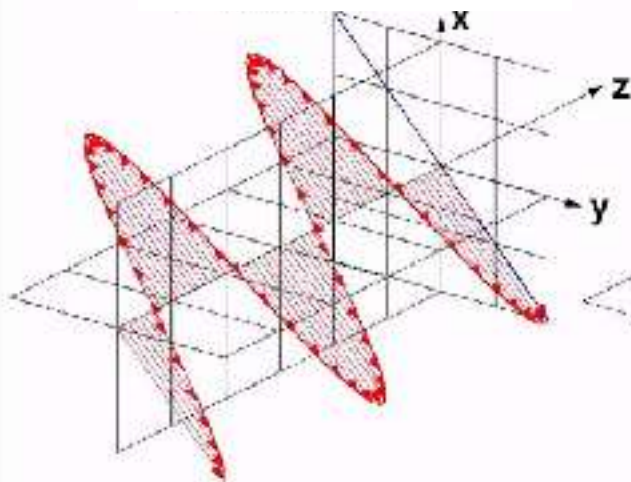
Low Frequency Array (10-240 MHz)



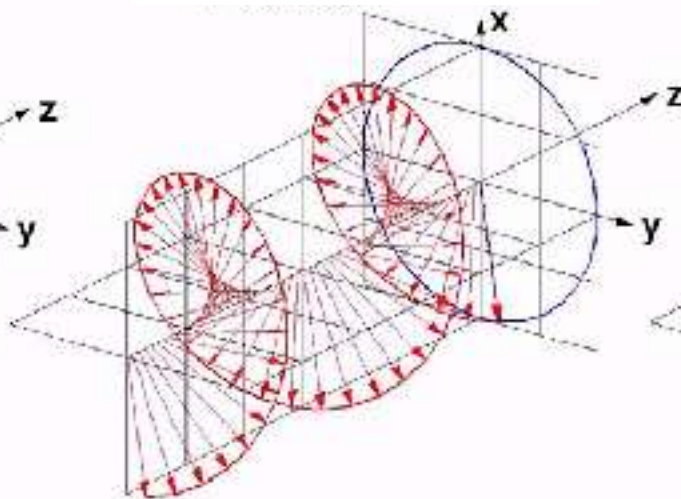
- nema pomičnih dijelova, istovremeno promatranje cijelog vidljivog dijela neba, elektroničko usmjeravanje - mogućnost “razrokog” promatranja, veliki broj antena - velika osjetljivost



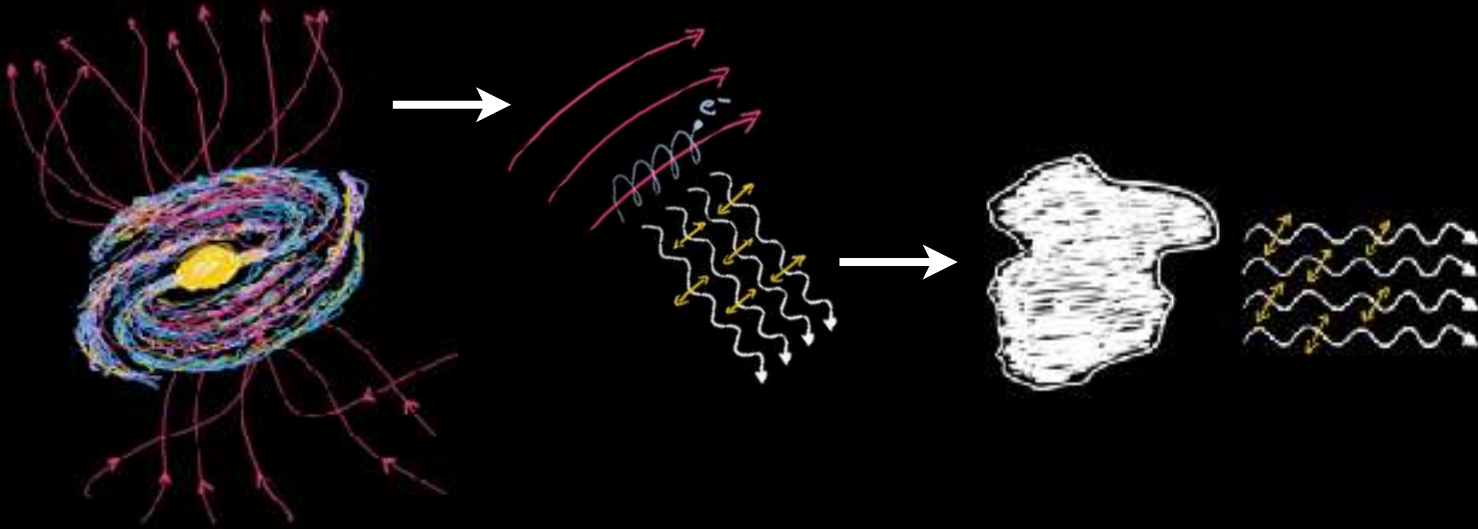
linearno polarizirani



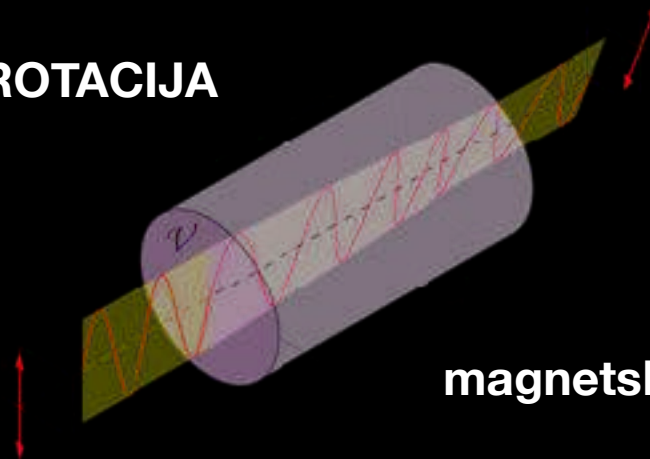
cirkularno polarizirani



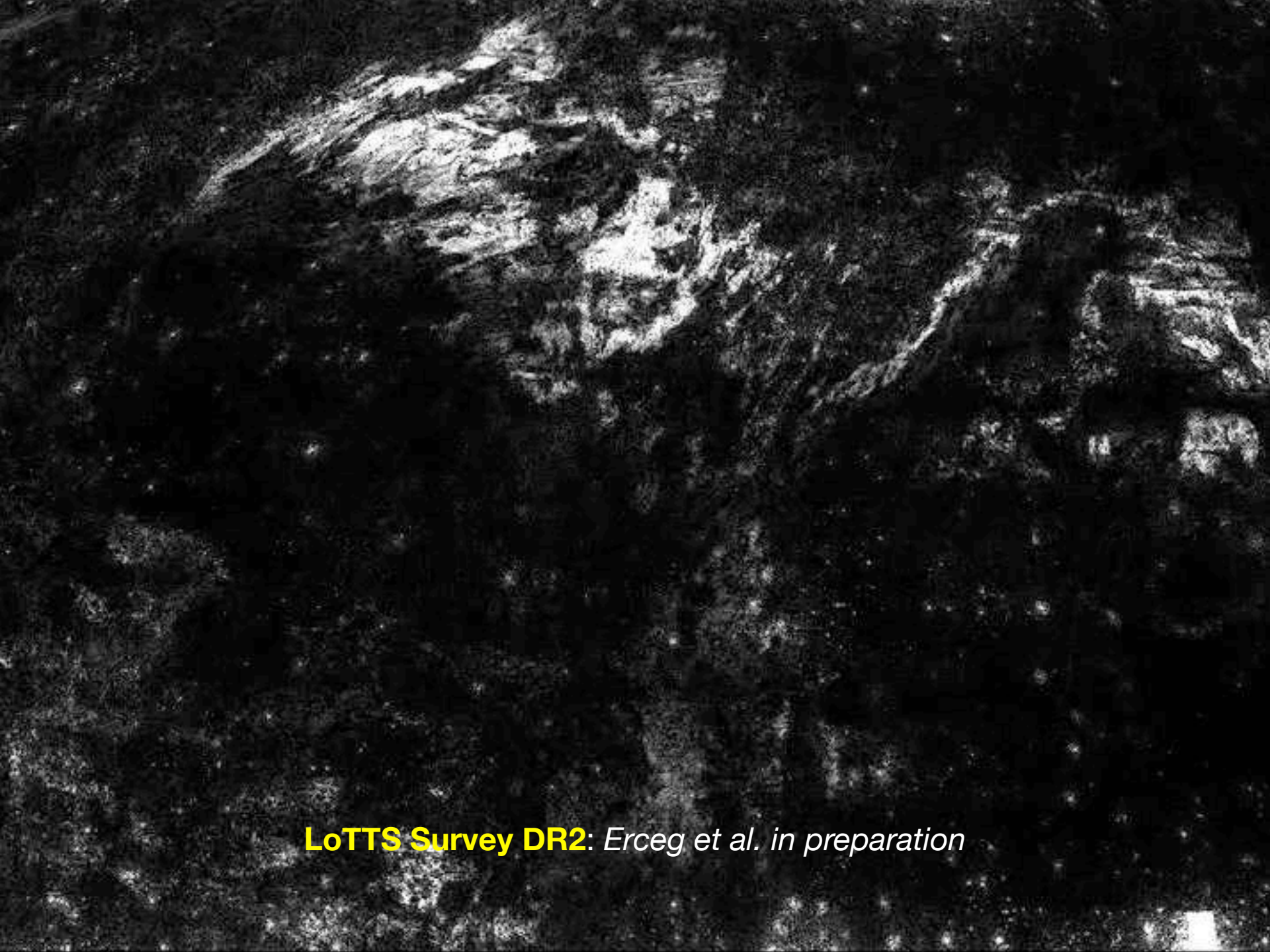
sinkrotronsko zračenje



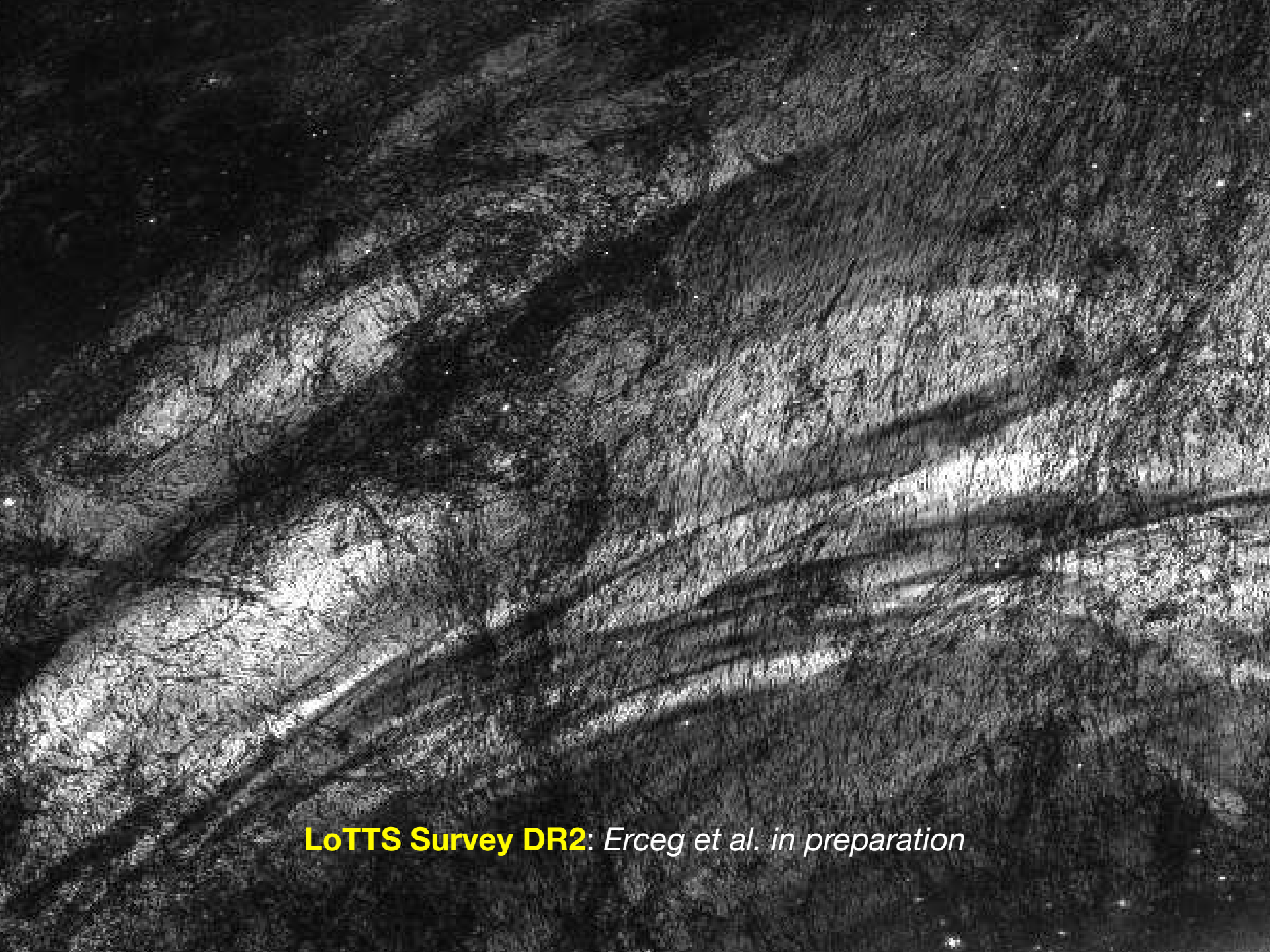
FARADAYEVA ROTACIJA



magnetsko polje + ionizirani plin

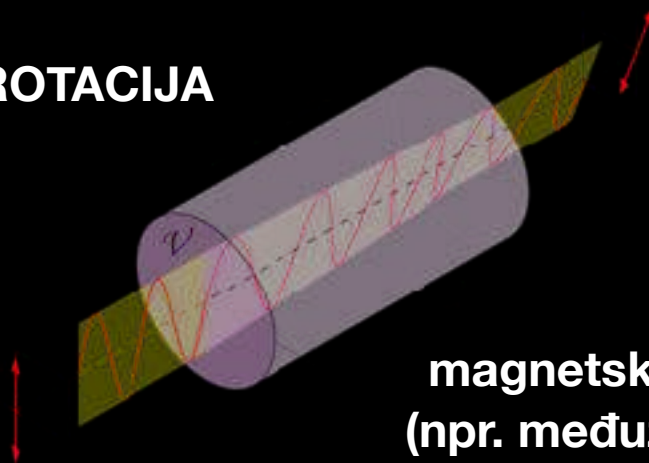


LoTTS Survey DR2: *Erceg et al. in preparation*



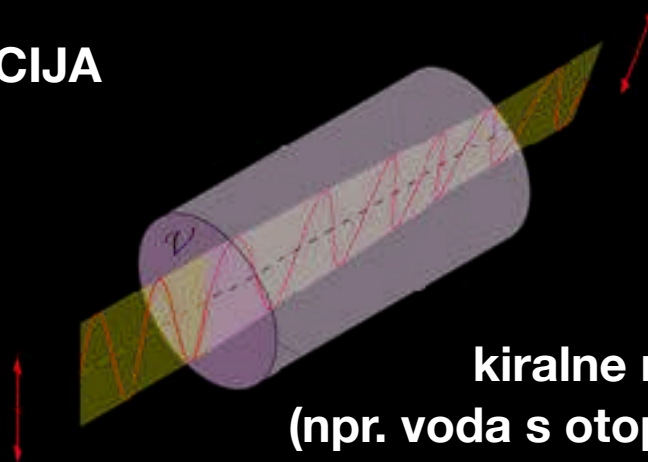
LoTTS Survey DR2: *Erceg et al. in preparation*

FARADAYEVA ROTACIJA



magnetsko polje + ionizirani plin
(npr. međuzvezdani ionizirani plin)

OPTIČKA ROTACIJA



kiralne molekule
(npr. voda s otopljenim šečerom)

