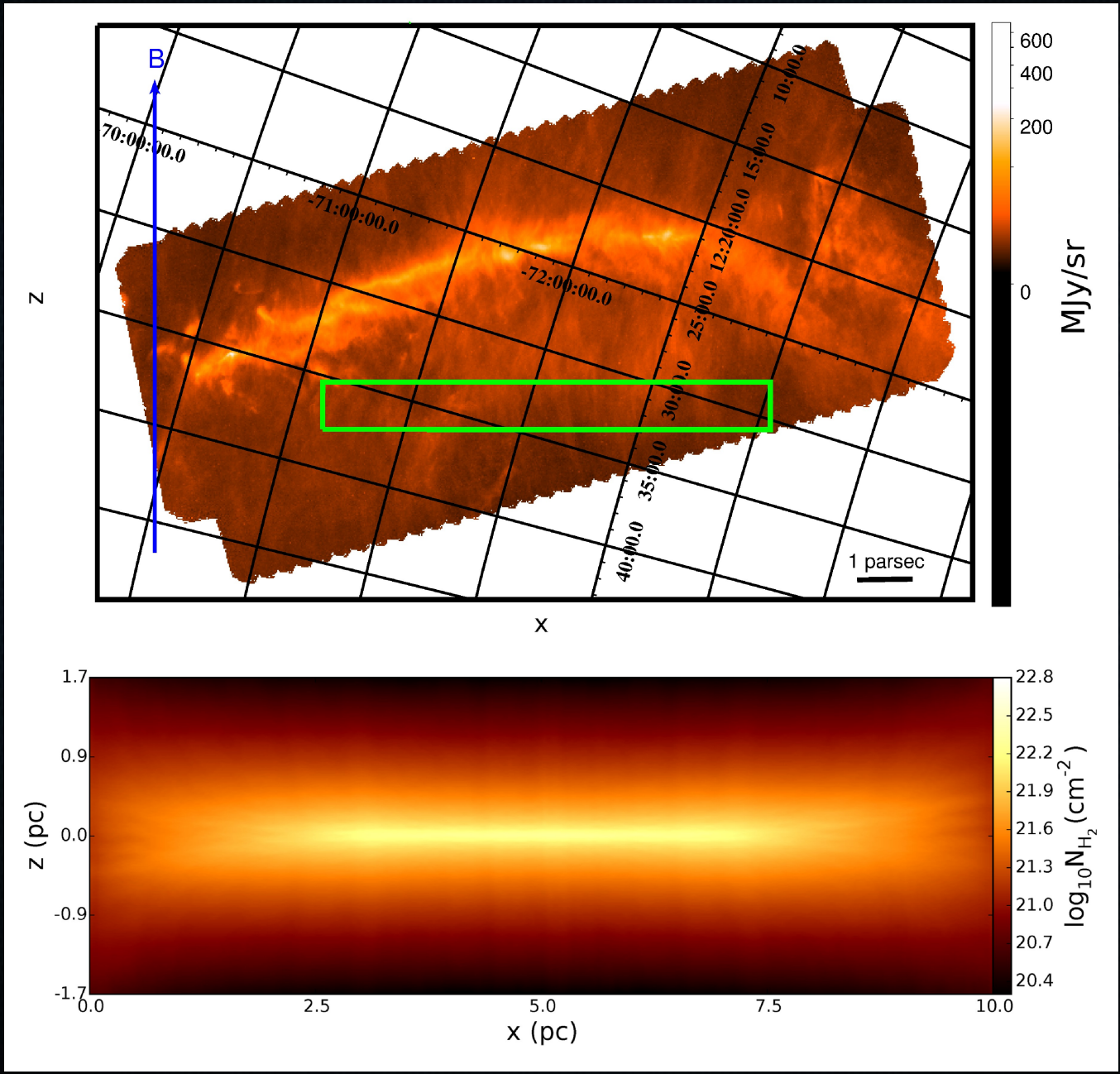
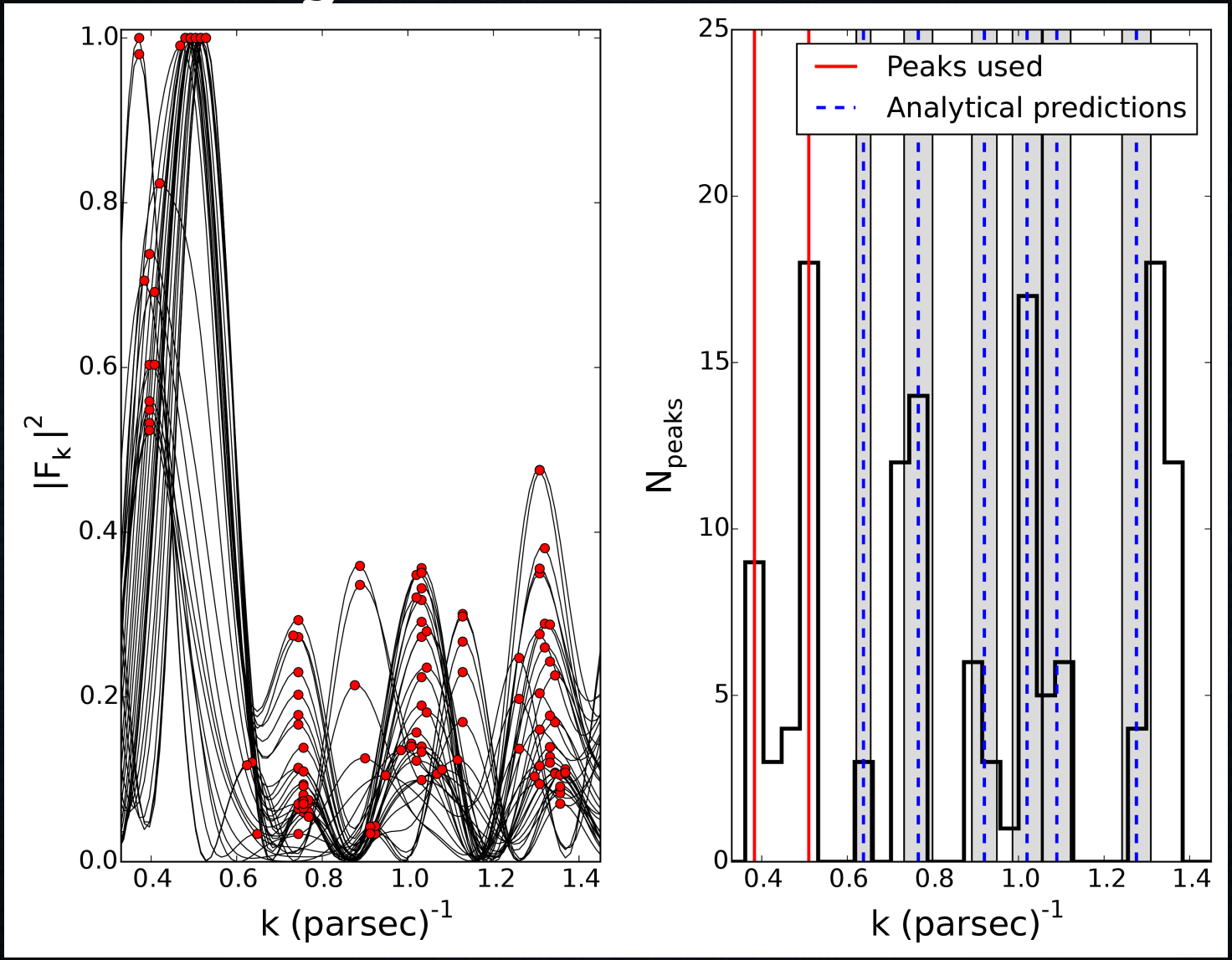
Magnetic seismology of interstellar clouds: unveiling the hidden dimension

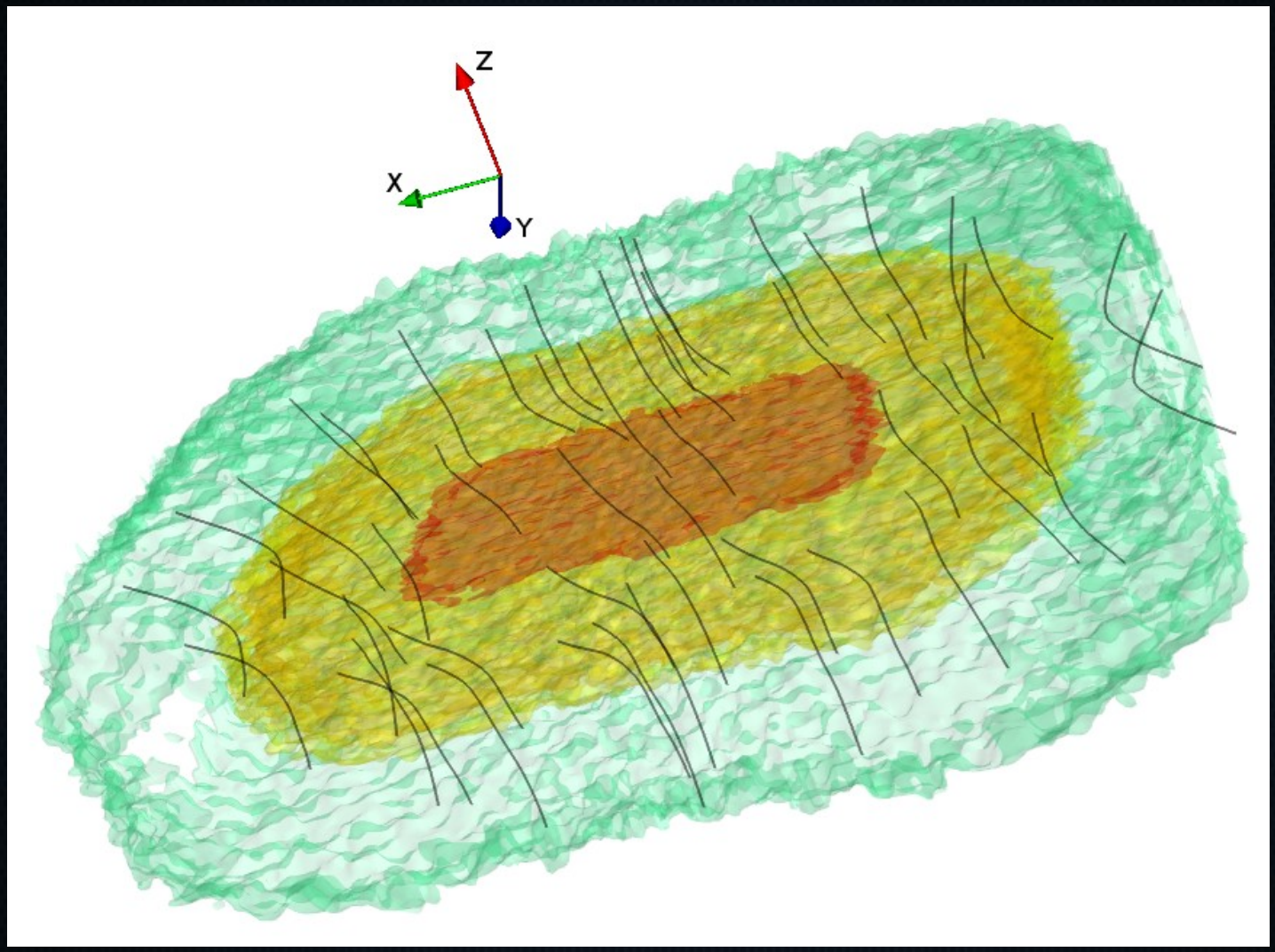


Magnetic seismology of interstellar clouds: unveiling the hidden dimension



$$k_{mn} = \sqrt{\left(\frac{\pi n}{L_x}\right)^2 + \left(\frac{\pi m}{L_y}\right)^2}$$

Magnetic seismology of interstellar clouds: unveiling the hidden dimension



Hidden - LOS dimension = 6.4 pc => Musca sheet viewed edge-on

Next step

Calculate the magnetic field strength from the dispersion relation of FMS waves

$$v_\varphi^2=(\omega/k)^2 \Rightarrow v_A^2+c_s^2=(2\pi/kT)^2 \Rightarrow$$
$$B^2=16\pi^3\rho/(kT)^2-c_s 4\pi\rho$$

For B ↗ and ρ ↘ T ~ 60 years at the resolution limit (optical)
Early observations (photographic plates) ~ 60 years old!

Best way to get velocity dispersion from double peaked line profiles?