

300 MHz - 3 GHz

Yes, we're interested

Big Science Driver: Galaxy Assembly and Evolution

- HI: heard several times about billion galaxies to $z=1.5$. And further...
- Diffuse HI (cosmic web) - IGM-galaxy feedback poorly understood aspect of galaxy formation
- Local HI mass function, probe low-mass end, in various environments - HVC/dwarfs

Cosmic Magnetism

- HI wrt young stars: HI outflows, and Zeeman splitting (also OH) - importance of magnetic fields vs. turbulence
- Continuum: extragalactic - cosmic magnetism (Faraday rotation). Galactic magnetic fields, cluster magnetic fields, the cosmic web itself?

Fundamental Physics

- Pulsars! Compelling science case, well-timed pulsars - gravitational wave antenna (LISA/Advanced LIGO measure masses $< 10^6 M_{\text{sun}}$)

Radio Synoptic Sky Telescope

- Surveying the sky fast and faint (microJy)
- Magnetar flares to $z \sim 0.1$
- GRBs
- Supernova factories - direct measurement of star formation rates

What New Instrument?

- HI surface brightness sensitivity: baselines 10's of meters to 1000's of kms, heavy weighting within 50 km
- microJy per 1 km/s spectral channel (MW at $z=1$, 10^3 - $4 M_{\text{sun}}$ cloud at Virgo)
- Pulsars drive time resolution