



FIG. 1 (color online). (top) Northern-hemisphere number counts per unit redshift (dN/dz) for 21-cm absorption systems $f_{21\text{ cm}}$ in black solid line, and NVSS radio sources f_{QSO} in (green) dashed line. (bottom) Velocity drift forecast by 21-cm absorption systems by CHIME-like telescope assuming a concordance ΛCDM universe. The observation span is 10 years. The black solid line is the theoretical prediction by a ΛCDM universe, while the predictions of matter-only universes $\Omega_M = 0.27$, $\Omega_M = 1$, which are decelerating, are shown in (green) dashed line and (red) dash-dotted line. CHIME's observable redshift range $0.8 < z < 2.5$ is shown by (orange-) shaded regions in both panels of the figure.