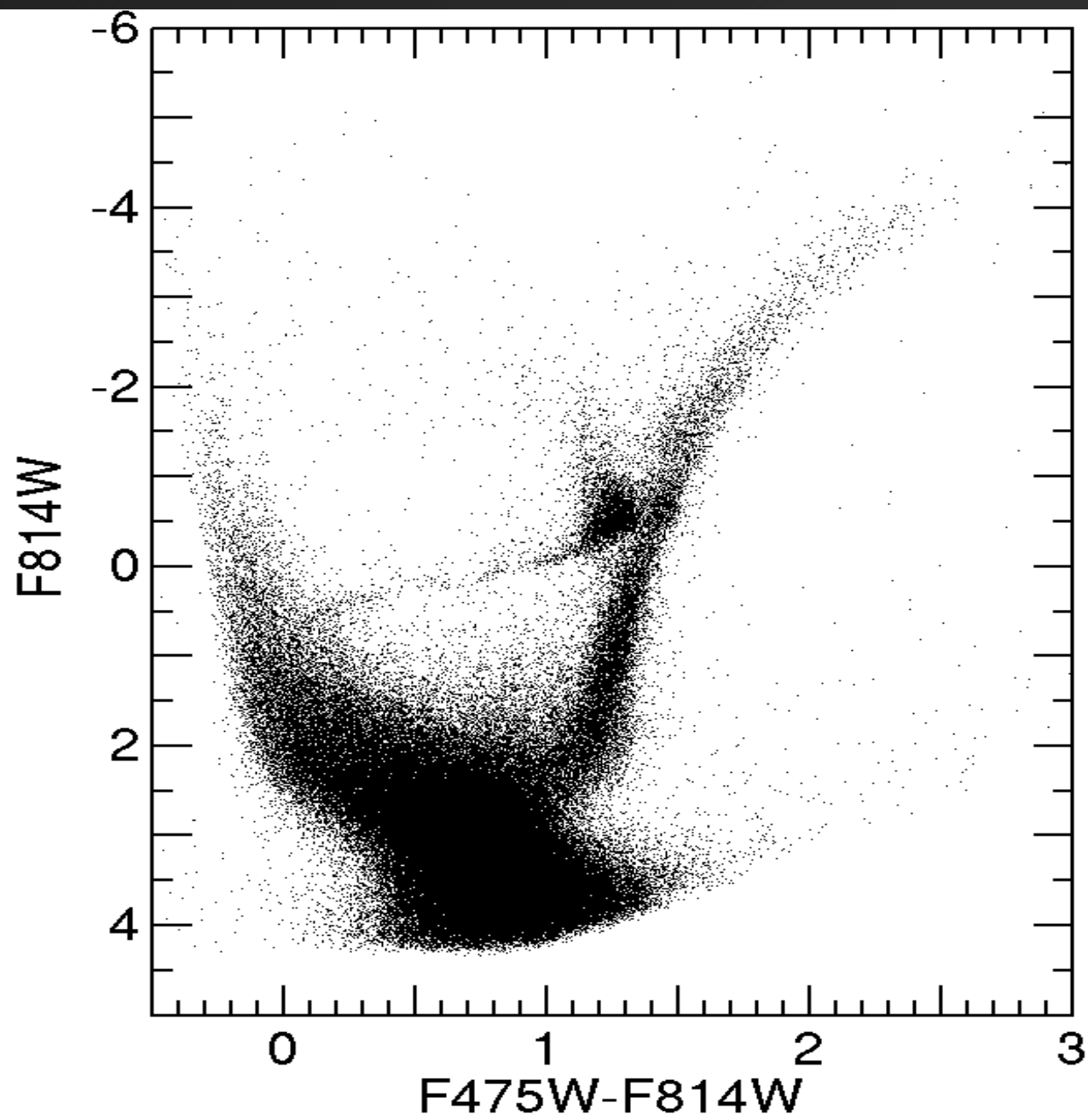


THE STAR FORMATION HISTORY

STATISTICAL ANALYSIS OF STELLAR POPULATIONS

IAC - STELLAR POPULATIONS GROUP

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DERIVING THE SFH - OUTLINE

1. Simple stellar population

$$\psi_i(t, z) = 1$$

$$t_i \leq t < t_i + \Delta_i t \quad z_i \leq z < z_i + \Delta_i z$$

$$\psi_i(t, z) = 0$$

otherwise

2. Any SFH can be obtained as:

$$\psi(t, z) = \sum_i \alpha_i \psi_i(t, z)$$

3. Parameterize the observational and the simple iCMDs using boxes or grid

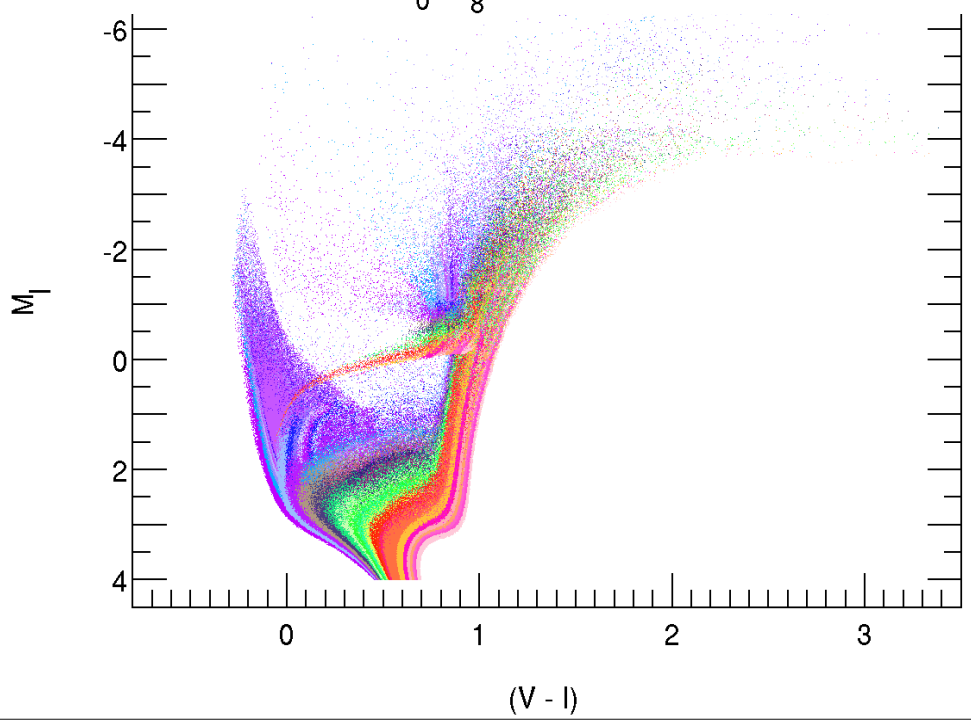
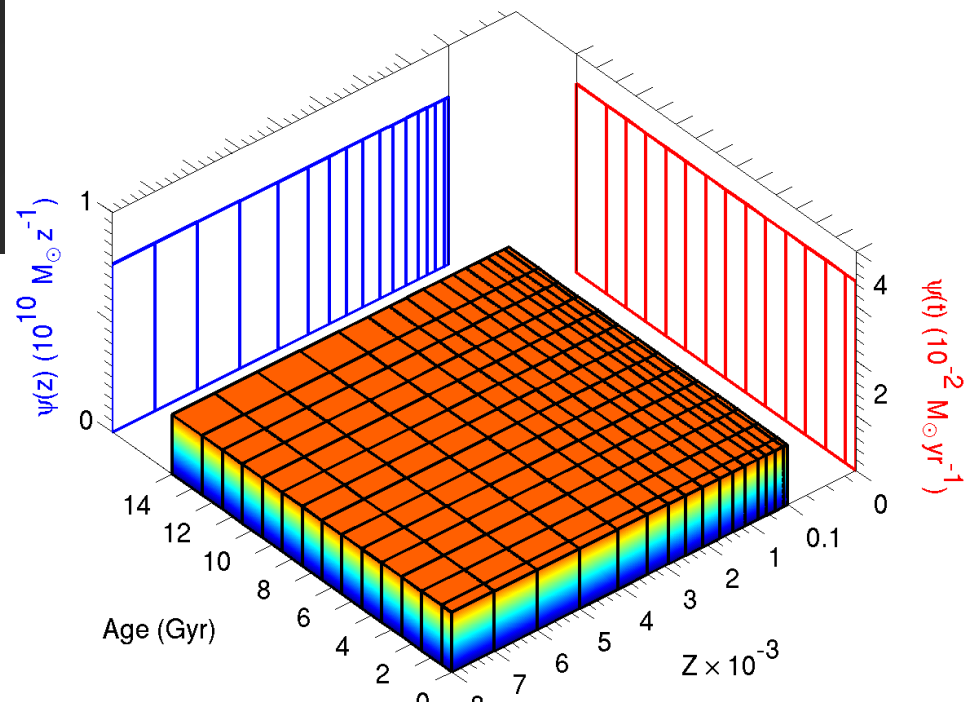
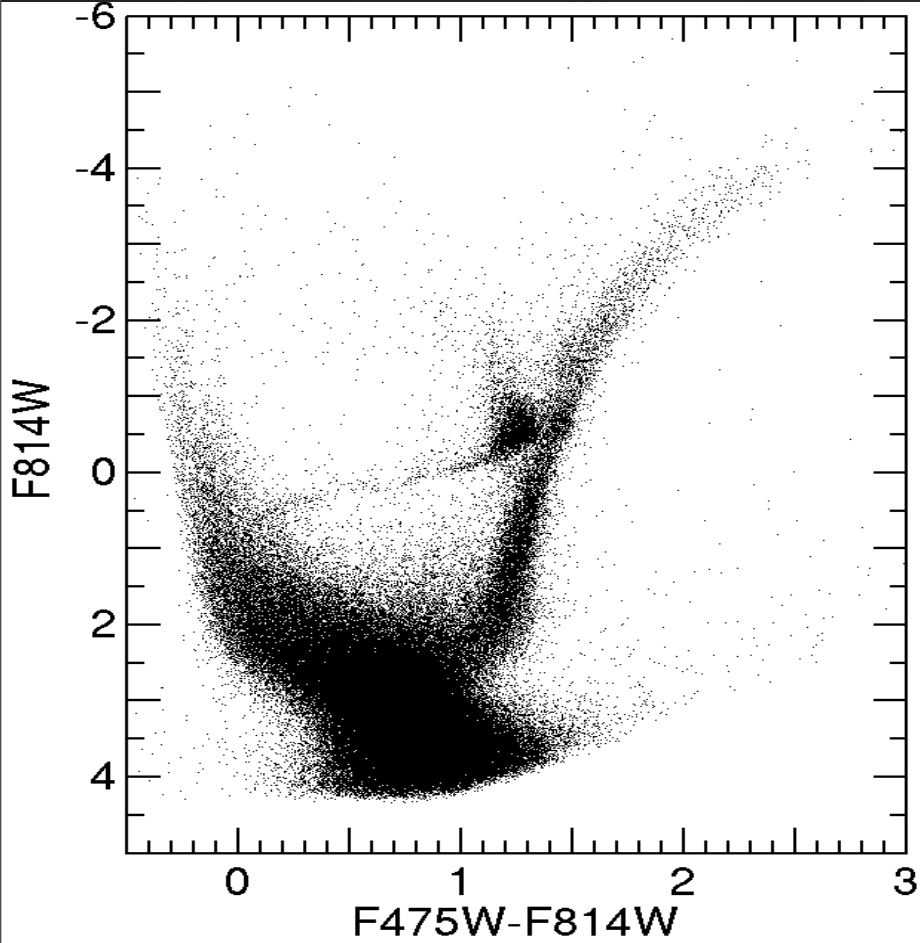
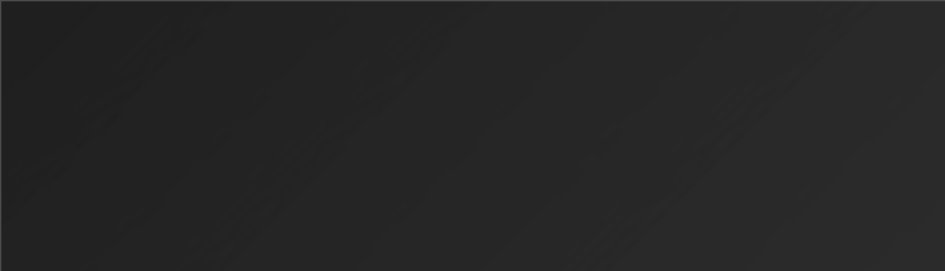
4. The stellar distribution on the associated CMD is given by: $M_j = \sum_i \alpha_i M_{i,j}$

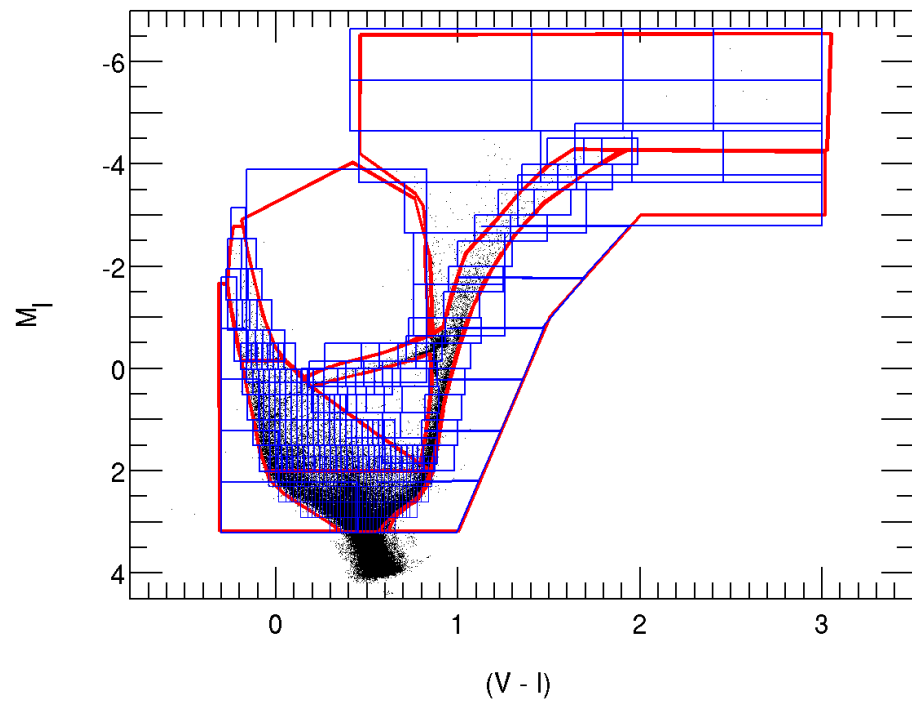
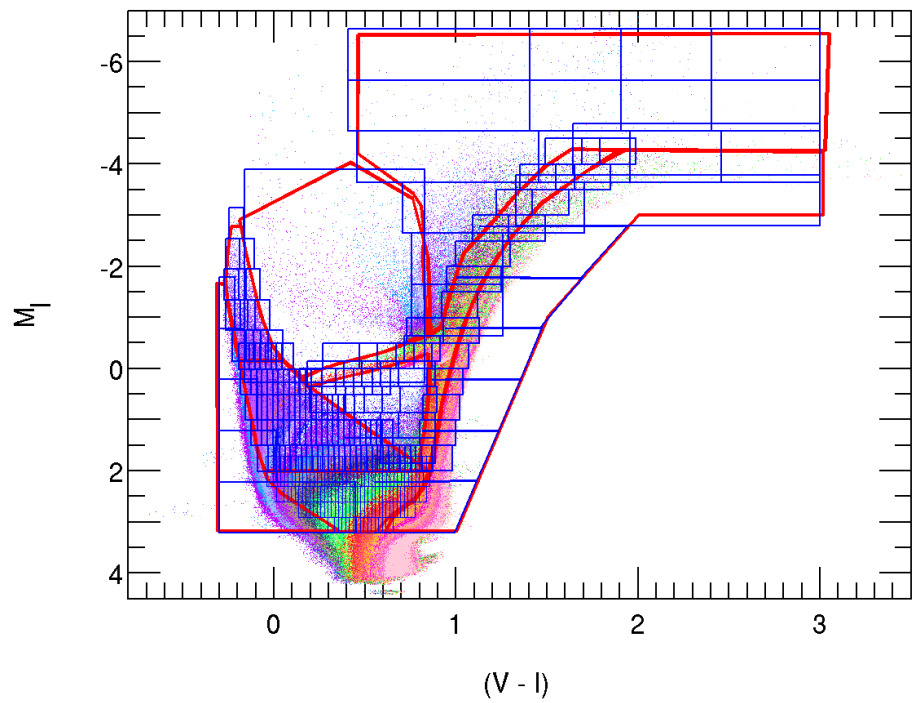
5. Find best solution using a merit function:

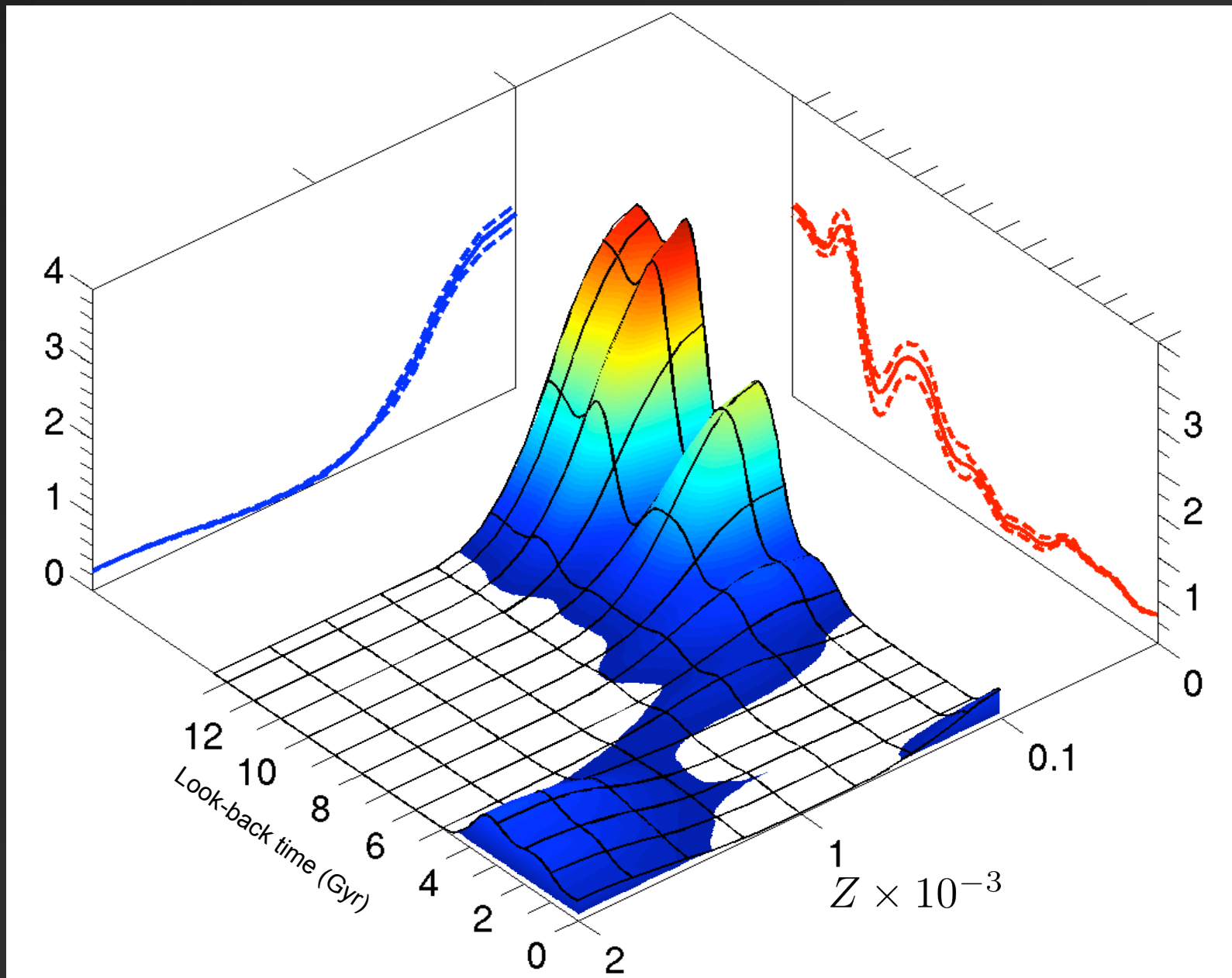
$$\chi^2 = \sum_j \frac{(M^j - O^j)^2}{O^j}$$

$$\chi_\gamma^2 = \frac{(M_j + \min(M_j, 1) - O_j)^2}{O_j + 1}$$

$$\chi_v^2 = \frac{\chi_\gamma^2}{v}$$







$$\psi(t)(10^{-9} M_{\odot} \text{ yr}^{-1} \text{ pc}^{-2})$$

Results

The LCID project Local Cosmology from Isolated Dwarfs

dSph

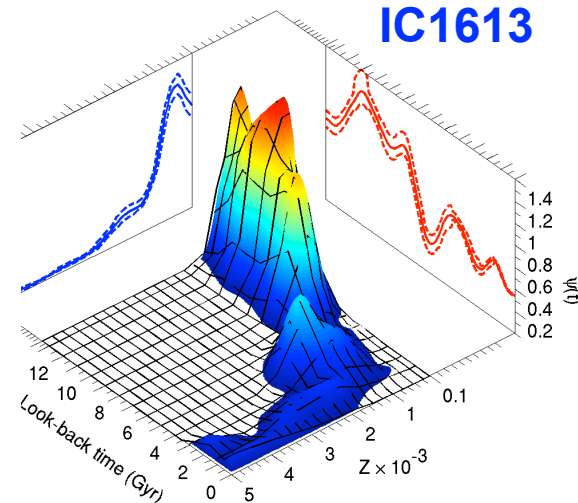
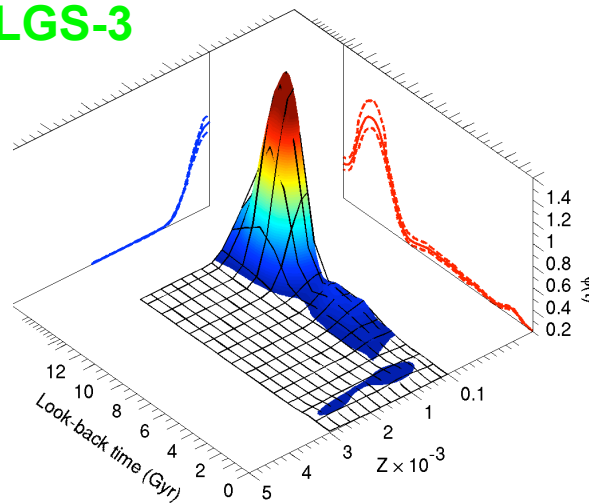
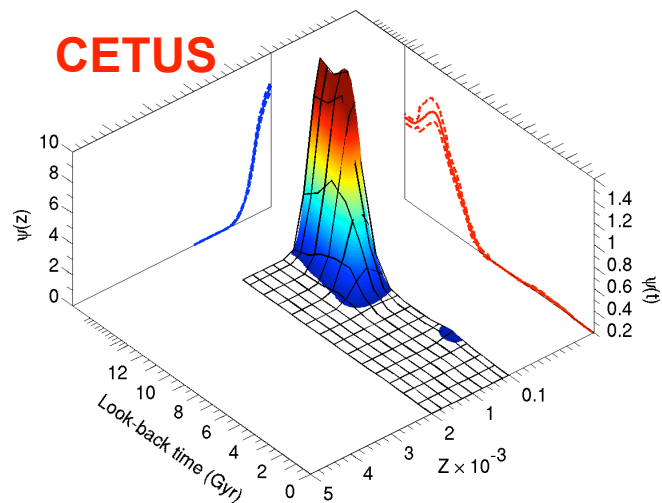
transition

dlrr

CETUS

LGS-3

IC1613



Monelli et al (2010)

Hidalgo et al (2010)

Skillman et al (2010)

Monelli et al (2010)

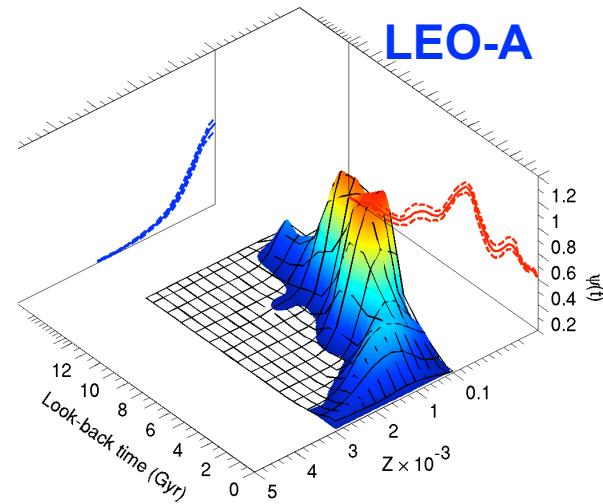
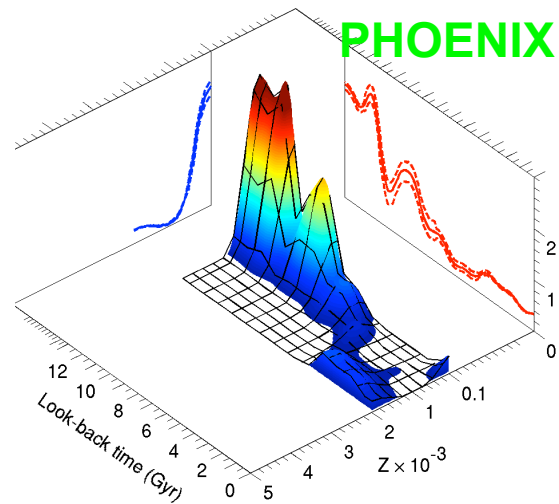
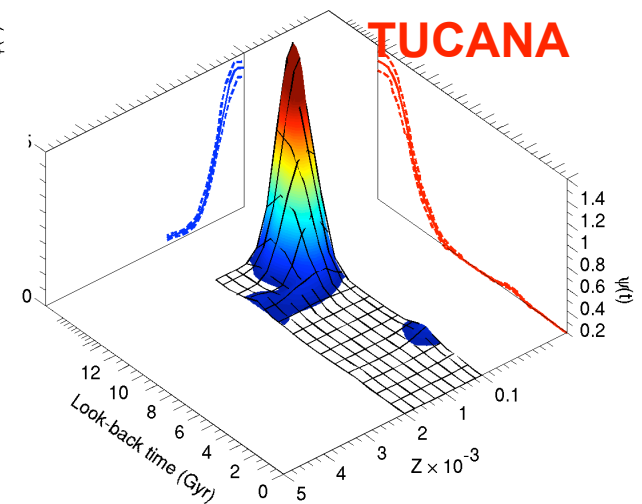
Hidalgo et al (2009)

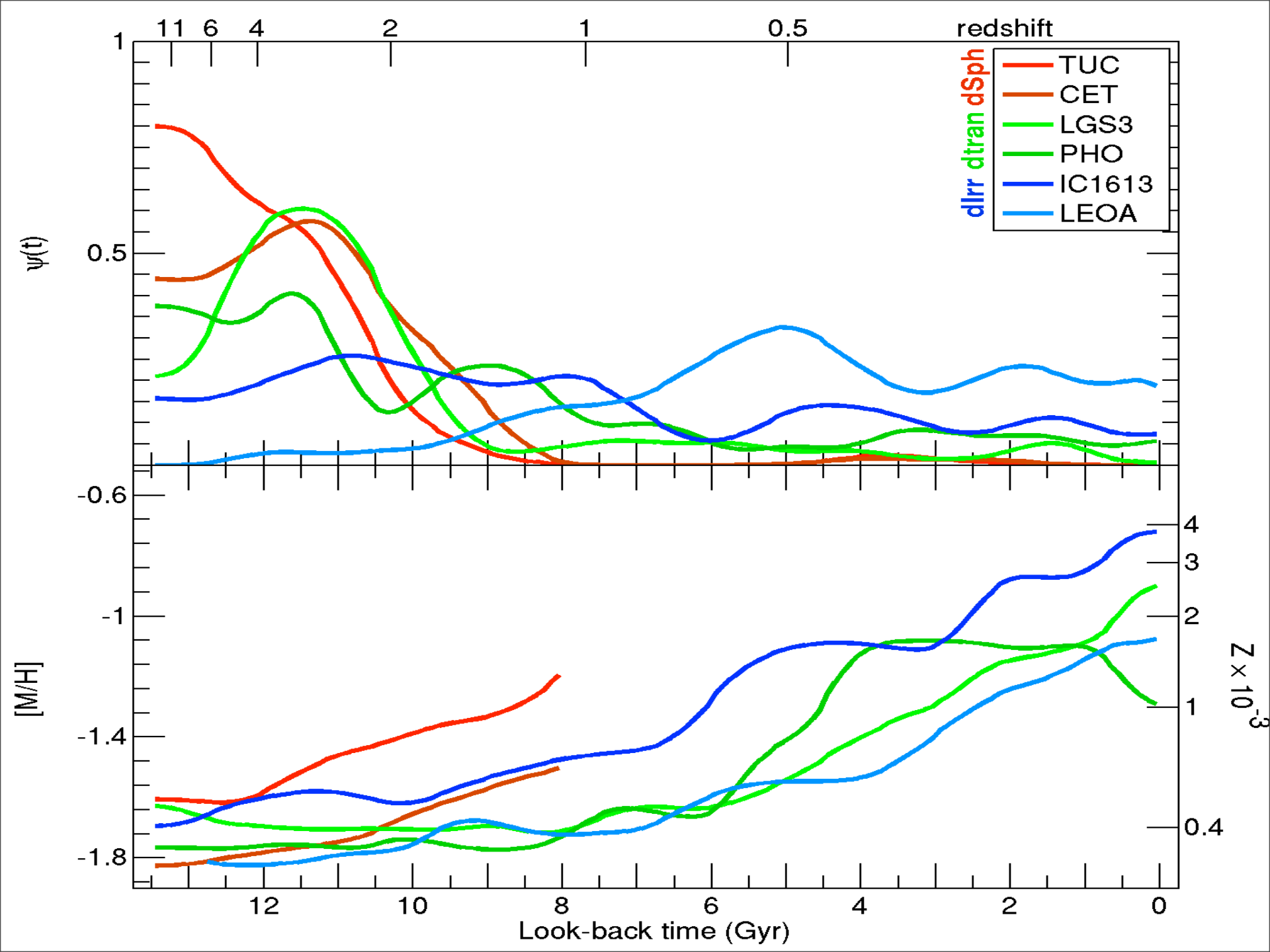
Cole et al (2007)

TUCANA

PHOENIX

LEO-A





Age and metallicity distribution of
stellar populations in the Milky Way

Test of the Stellar Evolution Theory

