

Appendix C: Extended BE99 diagrams

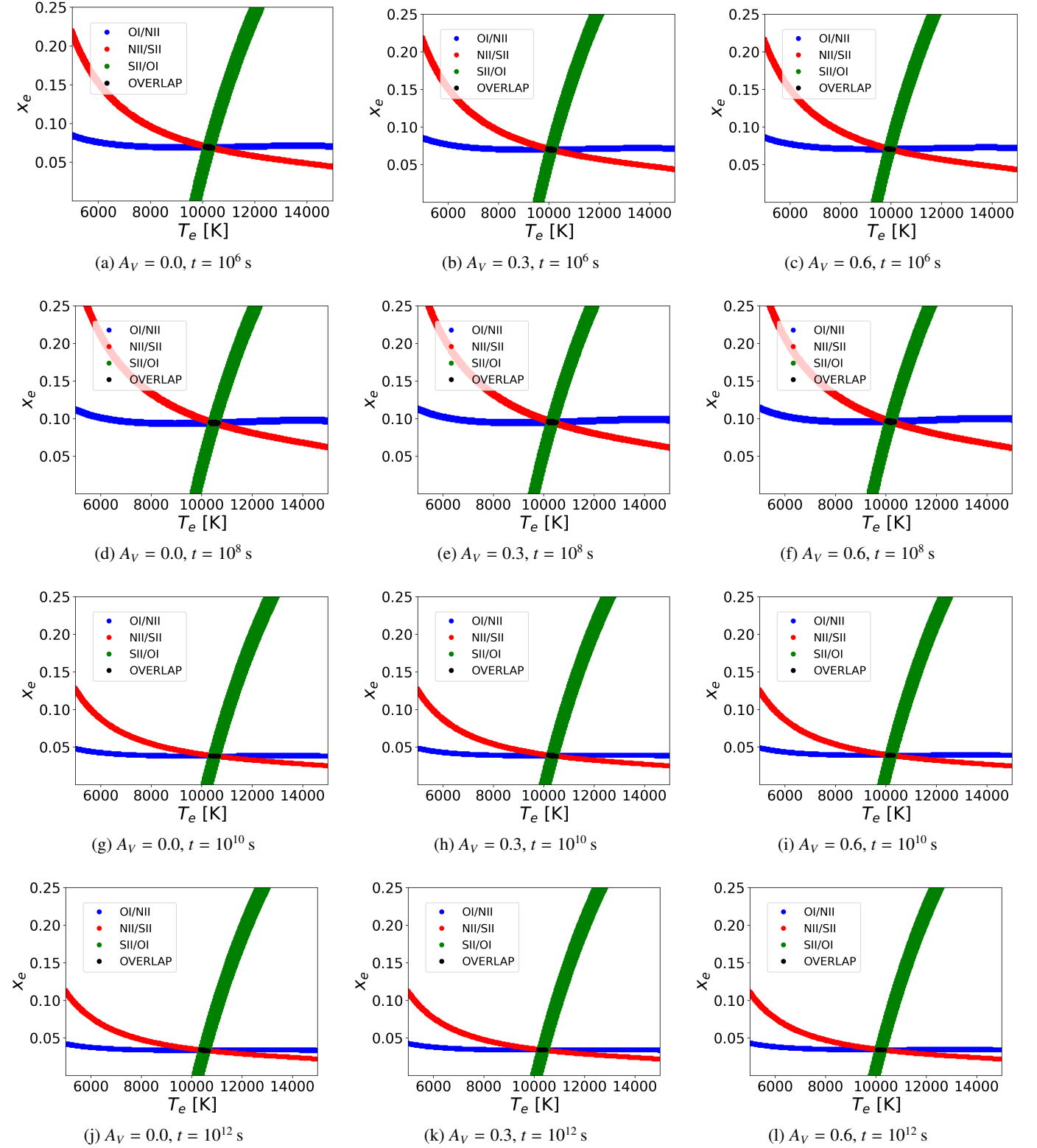


Fig. C.1: The BE99 diagrams in the time domain for the model in Fig. 1. We integrated the model until $t = 10^6$ s, 10^8 s, 10^{10} s, and 10^{12} s and reddened the synthetic line fluxes with three extinction values ($A_V = 0.0, 0.3, 0.6$ mag). These line fluxes are then used as input for constructing the shown BE99 diagrams. At each time and for each assumed extinction value the three stripes of line ratios (red, blue, green) meet in one location in the (x_e - T_e) diagram (black region). Even before reaching the reaction equilibrium ($\tau_{\text{EQ}} \approx 2 \times 10^{10}$ s) the BE99 method converges (see Fig. 3).

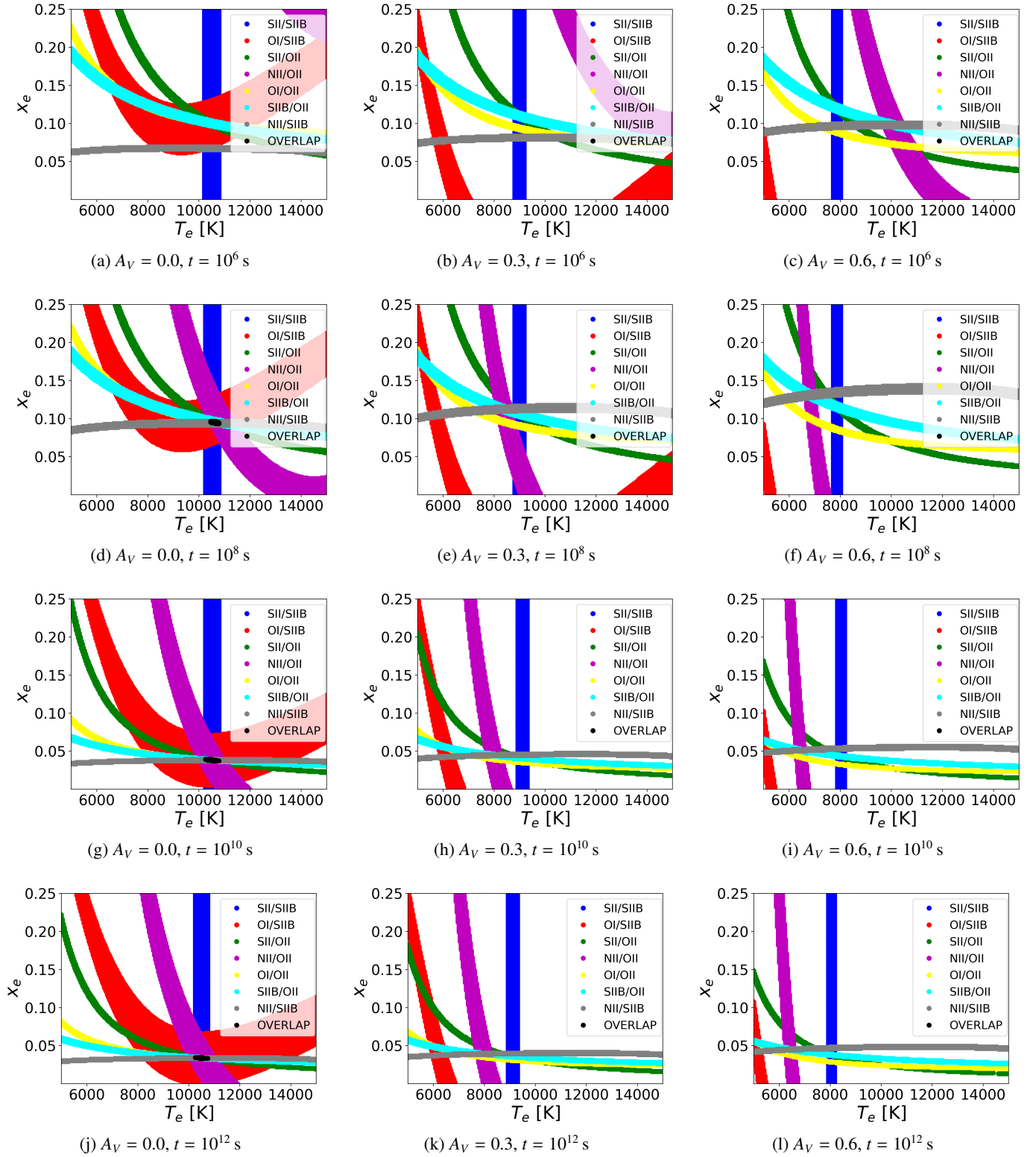


Fig. C.2: An extended version of the BE99 diagrams (BE99e) as depicted in Fig. C.1. When including further line ratios in the diagnostics (indicated as coloured stripes), the presence of extinction or an out-of-equilibrium situation can cause the stripes to not overlap in one location on the (x_e-T_e) diagram. Abbreviation: SIIB = [S II] $\lambda\lambda 4068+4076$, OII=[O II] $\lambda\lambda 3726+3729$.

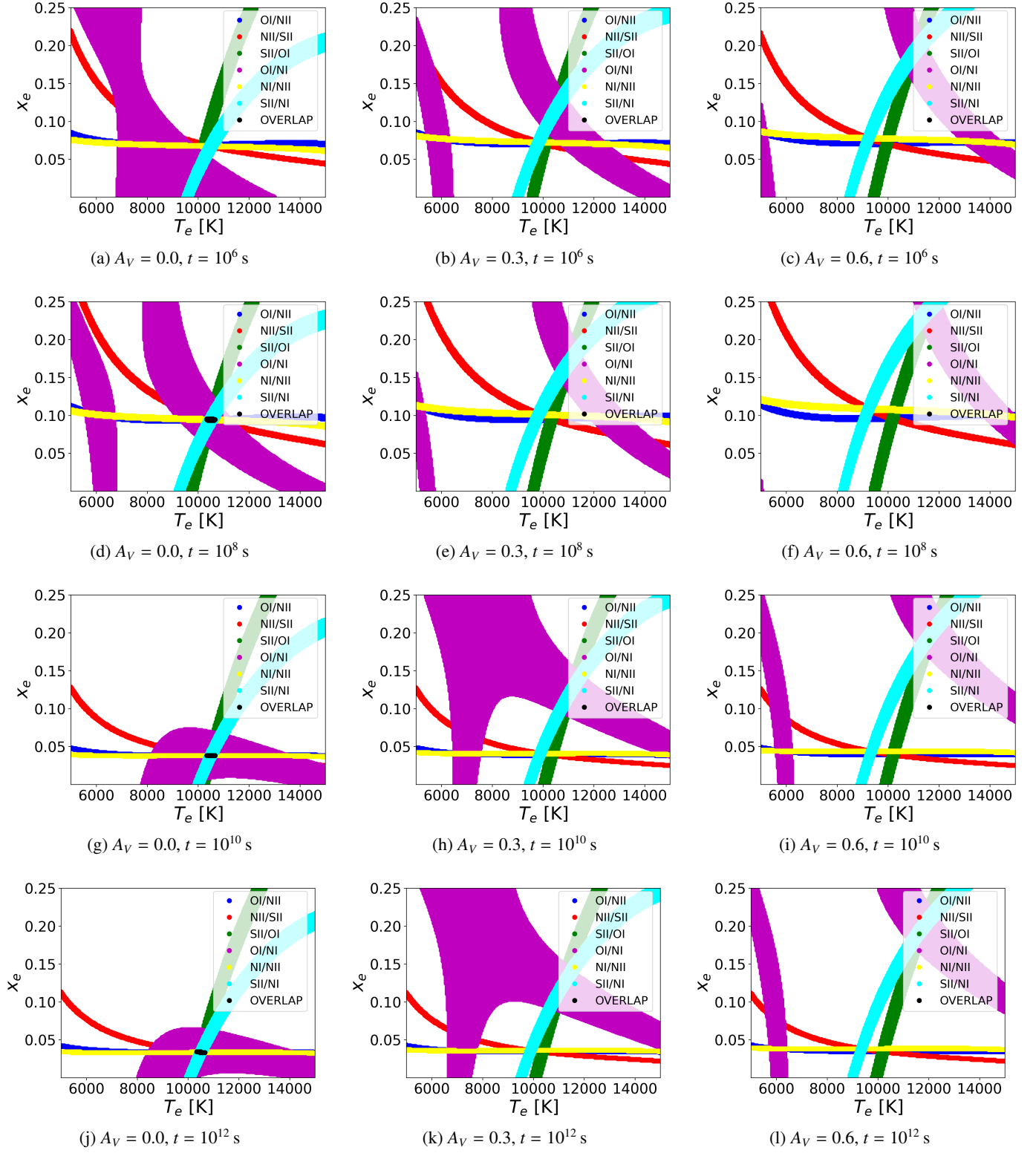


Fig. C.3: Same as Fig. C.2 but with the additional line ratio: $\text{NI} = [\text{NI}]\lambda\lambda 5198+5200$.

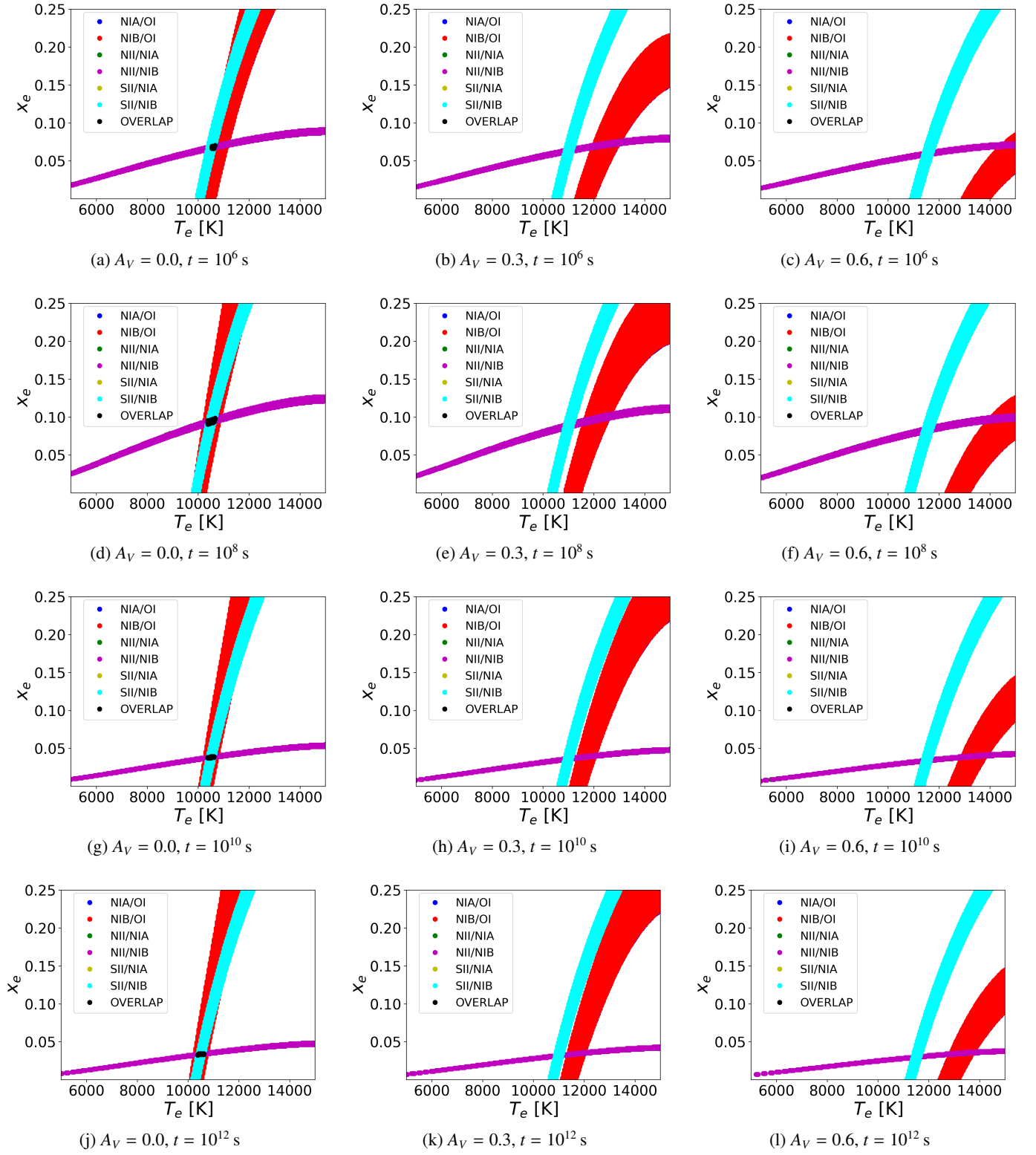


Fig. C.4: Same as Fig. C.2 but with the additional line ratio: NIA = $[N\text{I}]\lambda\lambda 10397.7+10398.1$, NIB = $[N\text{I}]\lambda\lambda 10407.1+10407.5$.

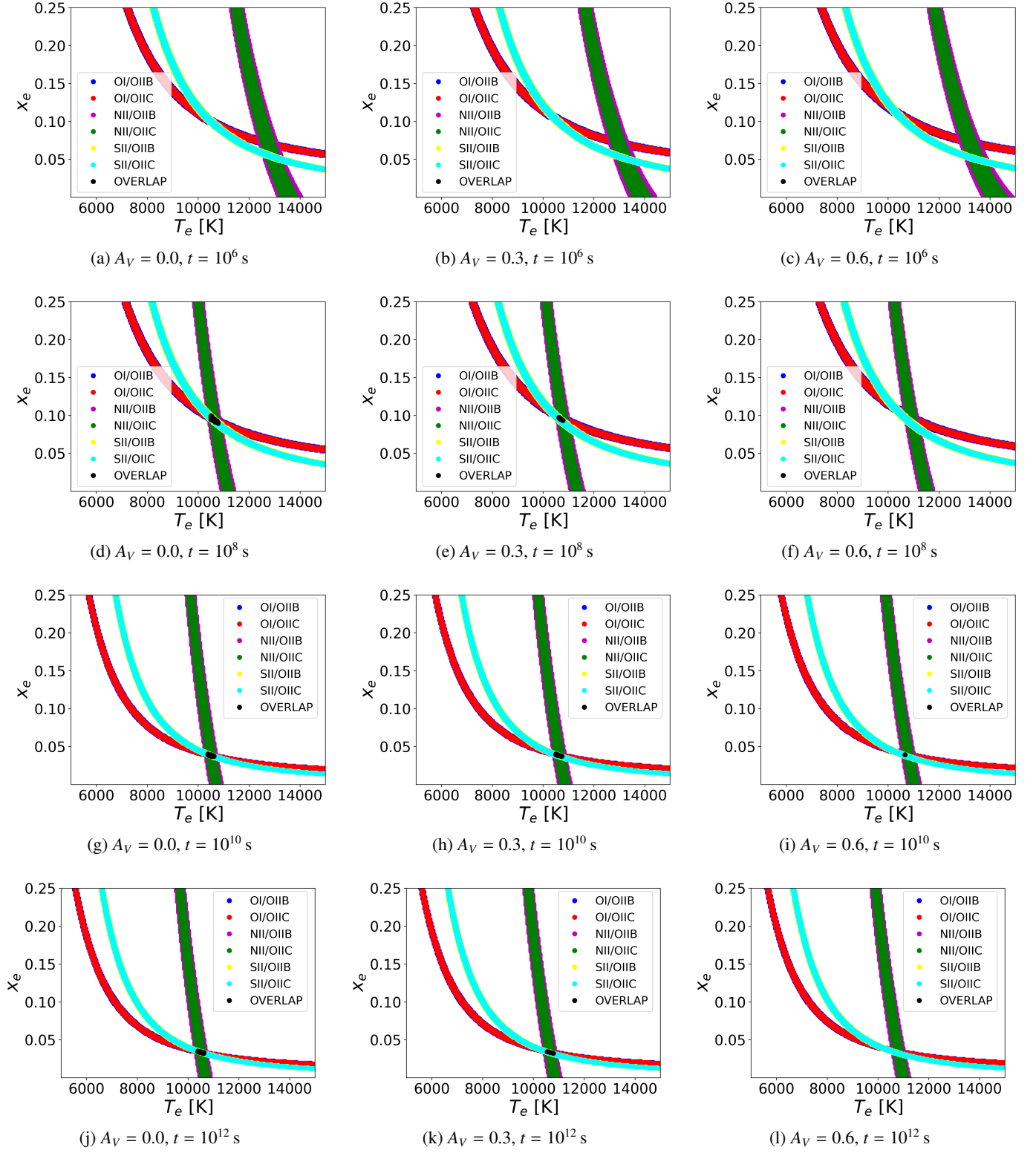


Fig. C.5: Same as Fig. C.2 but with the additional line ratio: OIIB = $[\text{O II}]\lambda\lambda 7319+7320$, OIIC = $[\text{O II}]\lambda\lambda 7329+7331$.