

Appendix A: Characteristics of our sample of cSB galaxies

Figures A.1- A.5 show the distributions of characteristics in the investigated cSB galaxies. Each galaxy is presented in four panels. Panel (a) shows the behaviour of the index $D_n(4000)$ (which is an indicator of stellar age) along the radius of the galaxy. The grey points denote values of the $D_n(4000)$ index in the individual spaxels, the red circles mark the median values of the $D_n(4000)$ index in bins of 0.05 in the fractional radius R/R_{25} , the bars show the scatter in the values of the $D_n(4000)$ index about the median value in the bins, and the blue dashed line shows the median value of the $D_n(4000)$ index in all the spaxels within the optical radius. Panel (b) presents the surface brightness in the emission $H\alpha$ line as a function of radius. The de-reddened and corrected for the galaxy inclination surface brightness are in units of L_\odot/pc^2 . The spaxels with the H II region-like spectra are shown by the blue circles, the spaxels with AGN-like spectra are denoted by the dark crosses, and the spaxels with the intermediate (INT) spectra are marked by the red plus signs. The dashed line shows the median value of the surface brightness in the emission $H\alpha$ line in all the spaxels within optical radius. Panel (c) shows the radial distribution of the oxygen abundance. The grey points denote oxygen abundances in the individual spaxels. The red circles mark the median values of the O/H in bins of 0.05 in the fractional radius R/R_{25} , and the bars show the scatter in O/H about the median value in the bins. The lines show the relations we determined for the radial abundance distributions. The spaxels which show the H II region-like spectra according to the BPT classification but not locate in the SF area in the WHaD diagram are marked by green plus signs. Panel (d) shows the distribution of spaxels of different BPT type spectra across the image of galaxy. The BPT radiation types for individual spaxels are colour-coded. The yellow circle shows the kinematic centre of the galaxy, the line indicates a position of the major kinematic axis of the galaxy, and the ellipse is the optical radius.

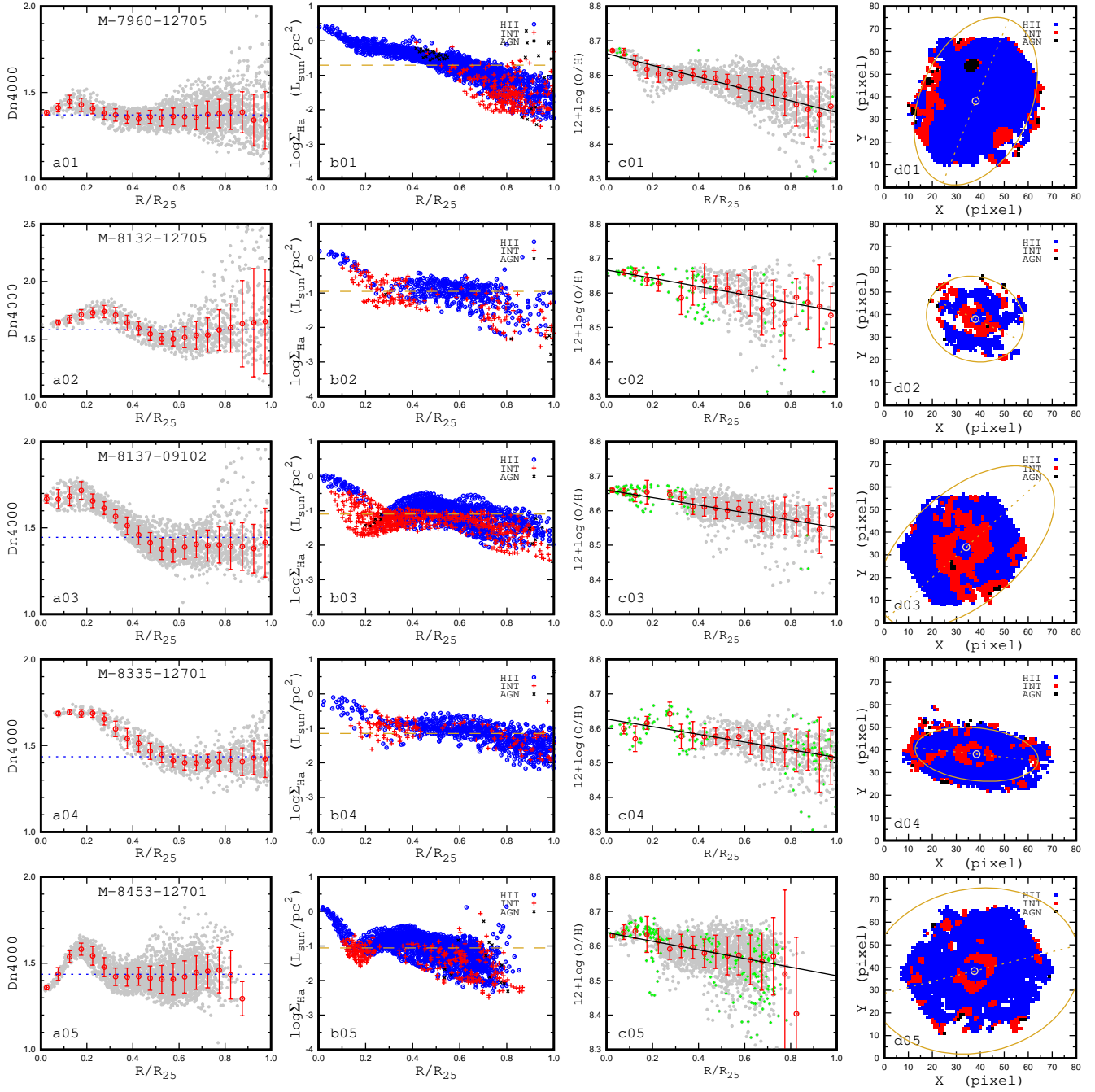


Fig. A.1. Characteristics of the cSB galaxies. *Column a:* Behaviour of the index $D_n(4000)$ (indicator of stellar age) along the galactic radius. The grey points denote values of the $D_n(4000)$ index in the individual spaxels, the red circles mark the median values of the $D_n(4000)$ index in bins of 0.05 in the fractional radius R/R_{25} , the bars show a scatter in the values of the $D_n(4000)$ index about the median value in the bins, and the blue dashed line shows the median value of the $D_n(4000)$ index in all the spaxels within the optical radius. *Column b:* Surface brightness in the emission $H\alpha$ line as a function of radius. The de-reddened and corrected for the galaxy inclination surface brightness are in units of L_{\odot}/pc^2 . The spaxels with the H II region-like spectra are shown by the blue circles, the spaxels with AGN-like spectra are denoted by the dark crosses, and the spaxels with the intermediate (INT) spectra are marked by the red plus signs. The dashed line shows the median value of the surface brightness in the emission $H\alpha$ line in all the spaxels within the optical radius. *Column c:* Radial distribution of the oxygen abundance. The grey points denote oxygen abundances in the individual spaxels. The red circles mark the median values of the O/H in bins of 0.05 in the fractional radius R/R_{25} , and the bars show the scatter in the O/H about the median value in the bins. The lines show the relations we determined for the radial abundance distributions. The spaxels which show the H II region-like spectra according to the BPT classification but not locate in the SF area in the WHaD diagram are marked by green plus signs. *Column d:* Distribution of spaxels with spectra of different BPT types across the galactic image. The BPT radiation types for individual spaxels are colour-coded. The yellow circle shows the kinematic centre of the galaxy, the line indicates the position of the major kinematic axis of the galaxy, and the ellipse is the optical radius.

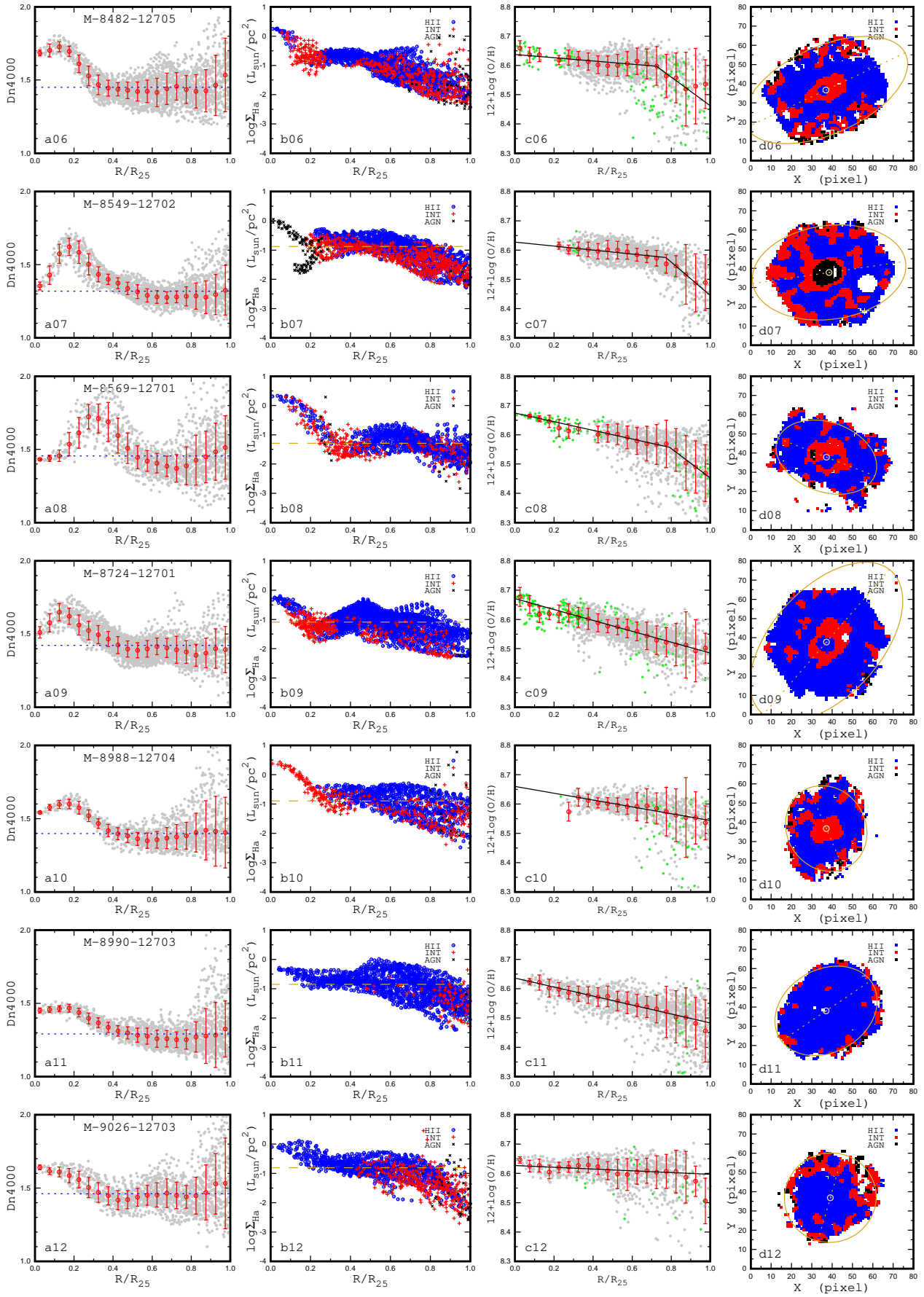


Fig. A.2. Same as Fig. A.1 but for other galaxies.

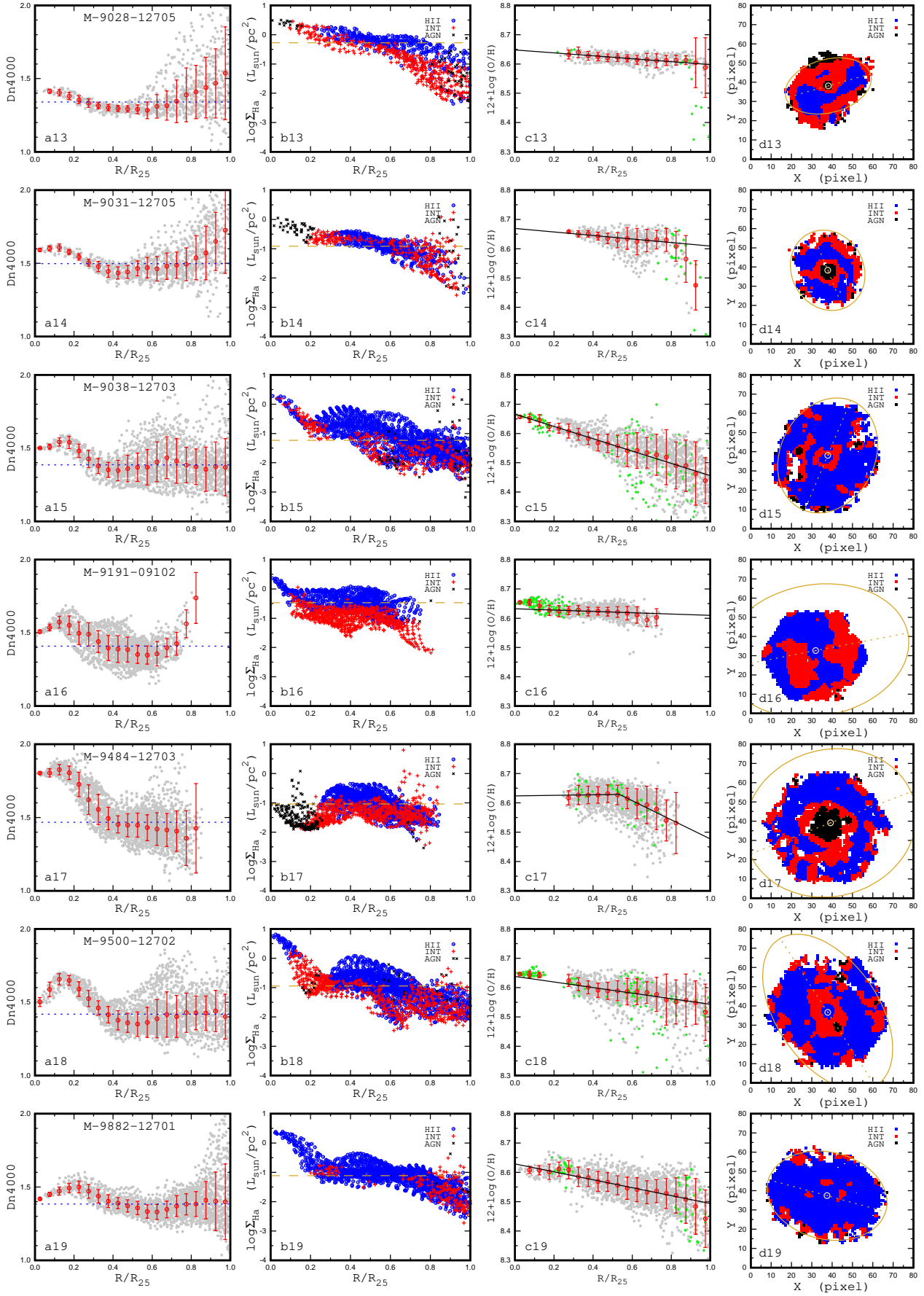


Fig. A.3. Same as Fig. A.1 but for other galaxies.

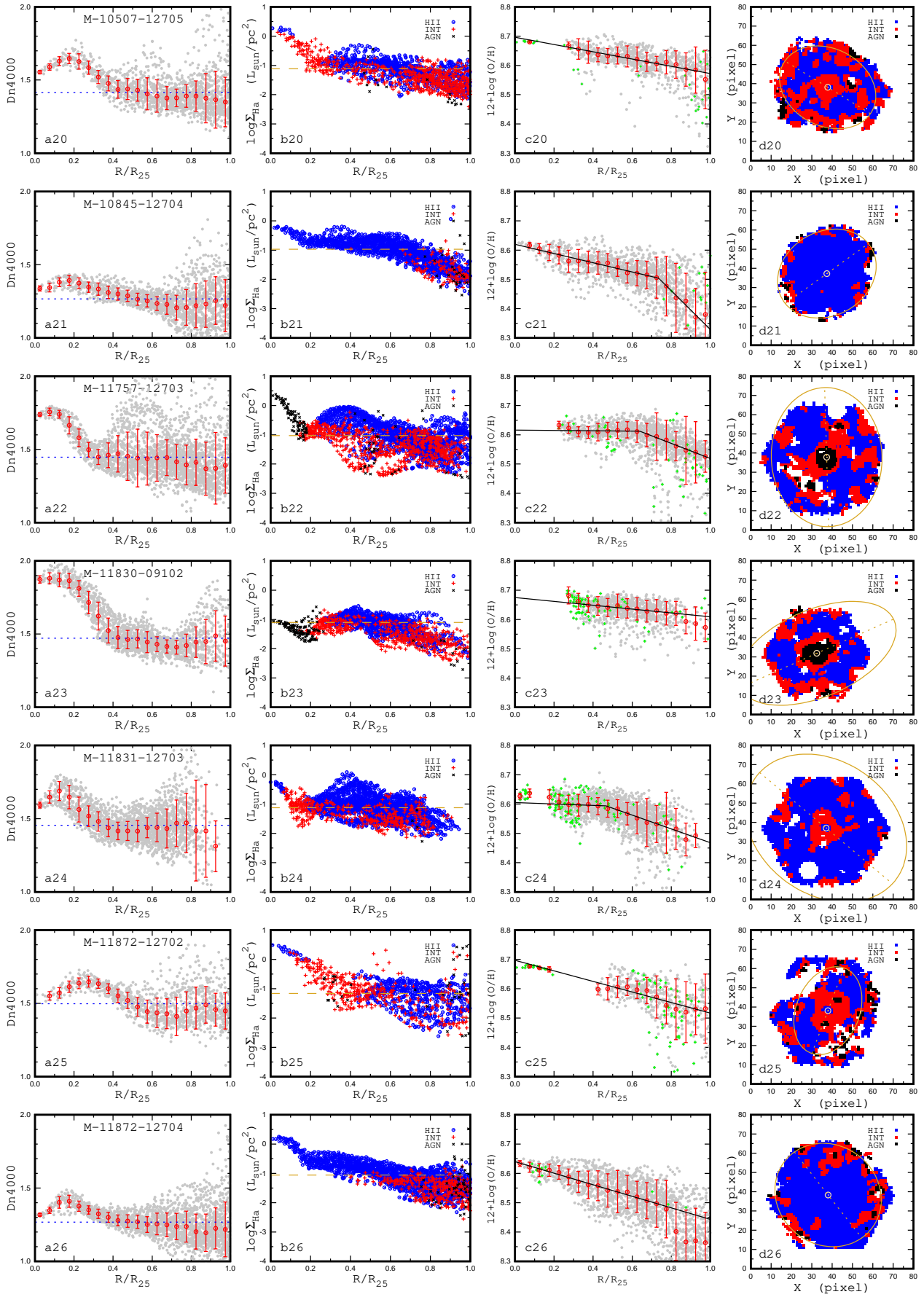


Fig. A.4. Same as Fig. A.1 but for other galaxies.

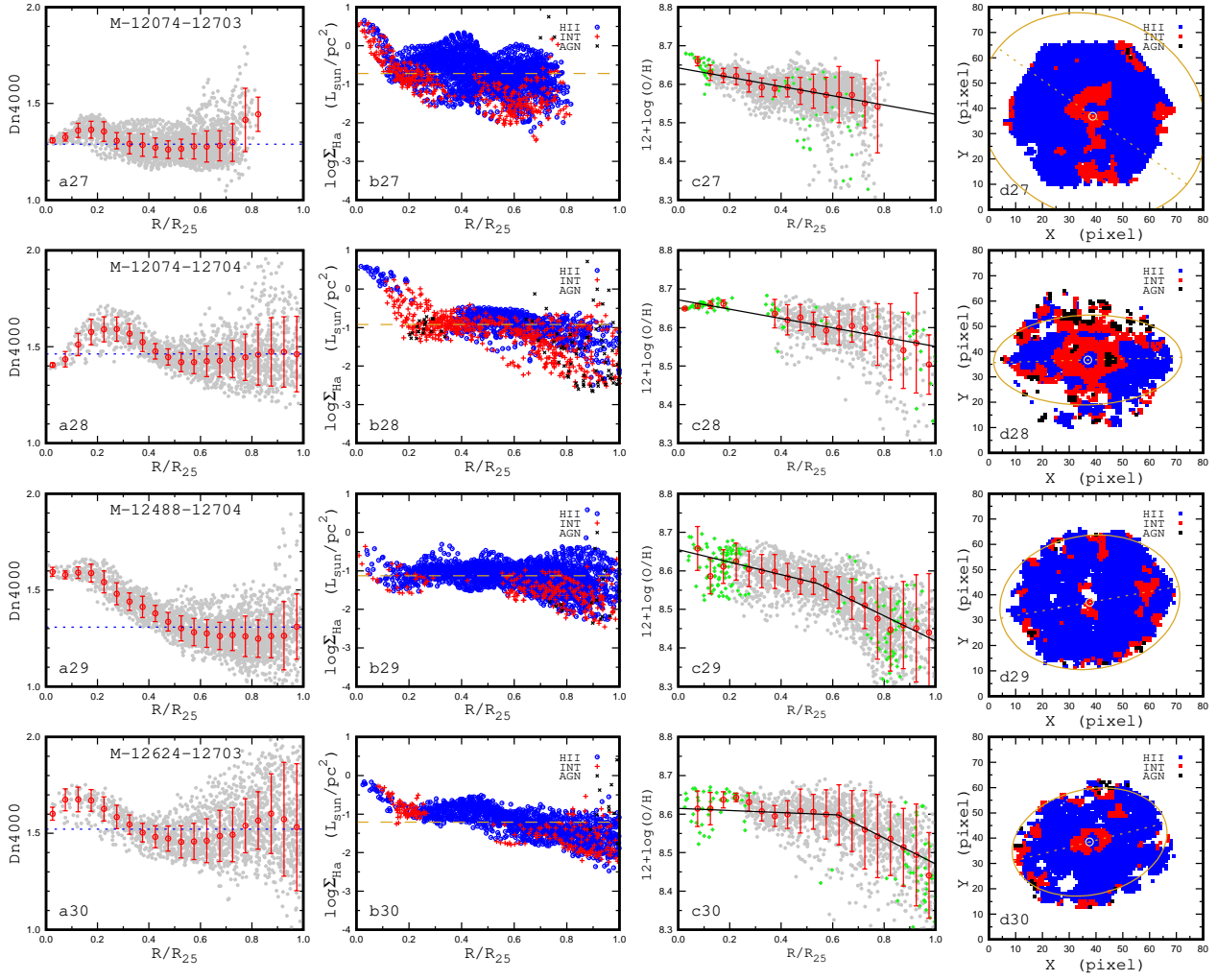


Fig. A.5. Same as Fig. A.1 but for other galaxies.

Appendix B: Comparison between the BPT and WHaD classifications of the spaxel spectra in the cSB galaxies

Figures B.1 – B.3 show the comparison between the BPT and WHaD classifications of the ionising sources for the spaxel spectra in the cSB galaxies. Each galaxy is presented in two panels. Panel (a) shows the BPT diagram for the individual spaxels in a galaxy. The spaxels with the H II-region-like spectra are denoted by the blue symbols, the spaxels with AGN-like spectra are shown by the dark symbols, and the red symbols are the spaxels with intermediate spectra. The solid and short-dashed curves mark the demarcation line between AGNs and H II regions defined by Kauffmann et al. (2003) and Kewley et al. (2001), respectively. The long-dashed line is the dividing line between Seyfert galaxies and LINERs defined by Cid Fernandes et al. (2010). Panel (b) shows the equivalent width of the emission H α line, $EW_{H\alpha}$, versus gas velocity dispersion, $\sigma_{H\alpha}$, diagram (WHaD diagram) suggested by Sanchez et al. (2024). They defined different areas in which the ionising source could be classified as: (1) SF, ionisation due to young-massive OB stars, related to recent star-formation activity ($EW_{H\alpha} > 6 \text{ \AA}$ and $\sigma_{H\alpha} < 57 \text{ km/s}$) (2) sAGNs/wAGNs, ionisation due to strong (weak) AGNs, and other sources of ionisations like high velocity shocks ($EW_{H\alpha} > 10 \text{ \AA}$ and $\sigma_{H\alpha} > 57 \text{ km/s}$ for sAGN and $10 \text{ \AA} > EW_{H\alpha} > 3 \text{ \AA}$ and $\sigma_{H\alpha} > 57 \text{ km/s}$ for wAGN); and (3) Ret, ionisation due to hot old low-mass evolved stars (post-AGBs), associated with retired regions within galaxies, in which there is no star-formation, ($EW_{H\alpha} < 3 \text{ \AA}$). The colour of each spaxel corresponds to the BPT classification (comes from panel (a)). In both panels, ten spaxels nearest to the centre of the galaxy are marked by the green circles.

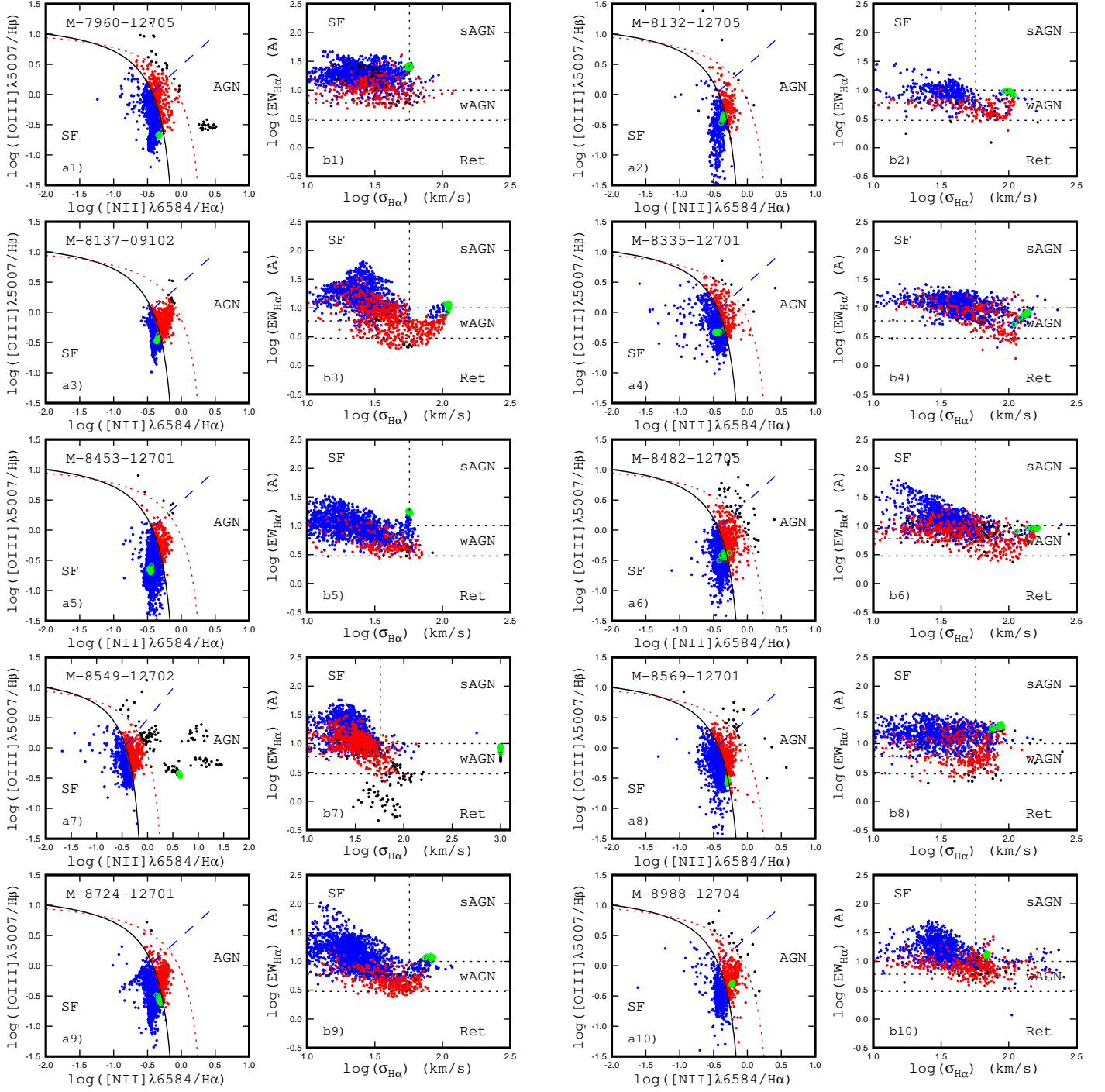


Fig. B.1. Two classification diagrams for the ionising sources for the individual spaxels of the cSB galaxies. Each galaxy is shown in two panels. *Panels a:* Standard BPT diagnostic diagram, the $[\text{O III}]\lambda 5007/\text{H}\beta$ versus $[\text{N II}]\lambda 6584/\text{H}\alpha$ (?), for the individual spaxels in a galaxy. The spaxels with the H II-region-like spectra are denoted by the blue symbols, the spaxels with AGN-like spectra are shown by the dark symbols, and the red symbols are the spaxels with intermediate spectra. The solid and short-dashed curves mark the demarcation line between AGNs and H II regions defined by Kauffmann et al. (2003) and Kewley et al. (2001), respectively. The long-dashed line is the dividing line between Seyfert galaxies and LINERs defined by Cid Fernandes et al. (2010). *Panels b:* WHaD diagram (Sanchez et al. 2024) showing the equivalent-width of H α emission line, $\text{EW}(\text{H}\alpha)$, versus the H α velocity dispersion, $\sigma_{\text{H}\alpha}$, for the individual spaxels in a galaxy. The colour-codes of the spaxels come from panel (a). The dotted lines divide areas of different ionising sources: SF, ionisation due to young-massive OB stars, related to recent star-formation activity; sAGNs/wAGNs, ionisation due to strong (weak) AGNs, and other sources of ionisation such as high velocity shocks; Ret, ionisation due to hot old low-mass evolved stars (post-AGBs), associated with retired regions within galaxies (in which there is no star-formation). In both panels, ten spaxels nearest to the centre of the galaxy are marked by the green circles.

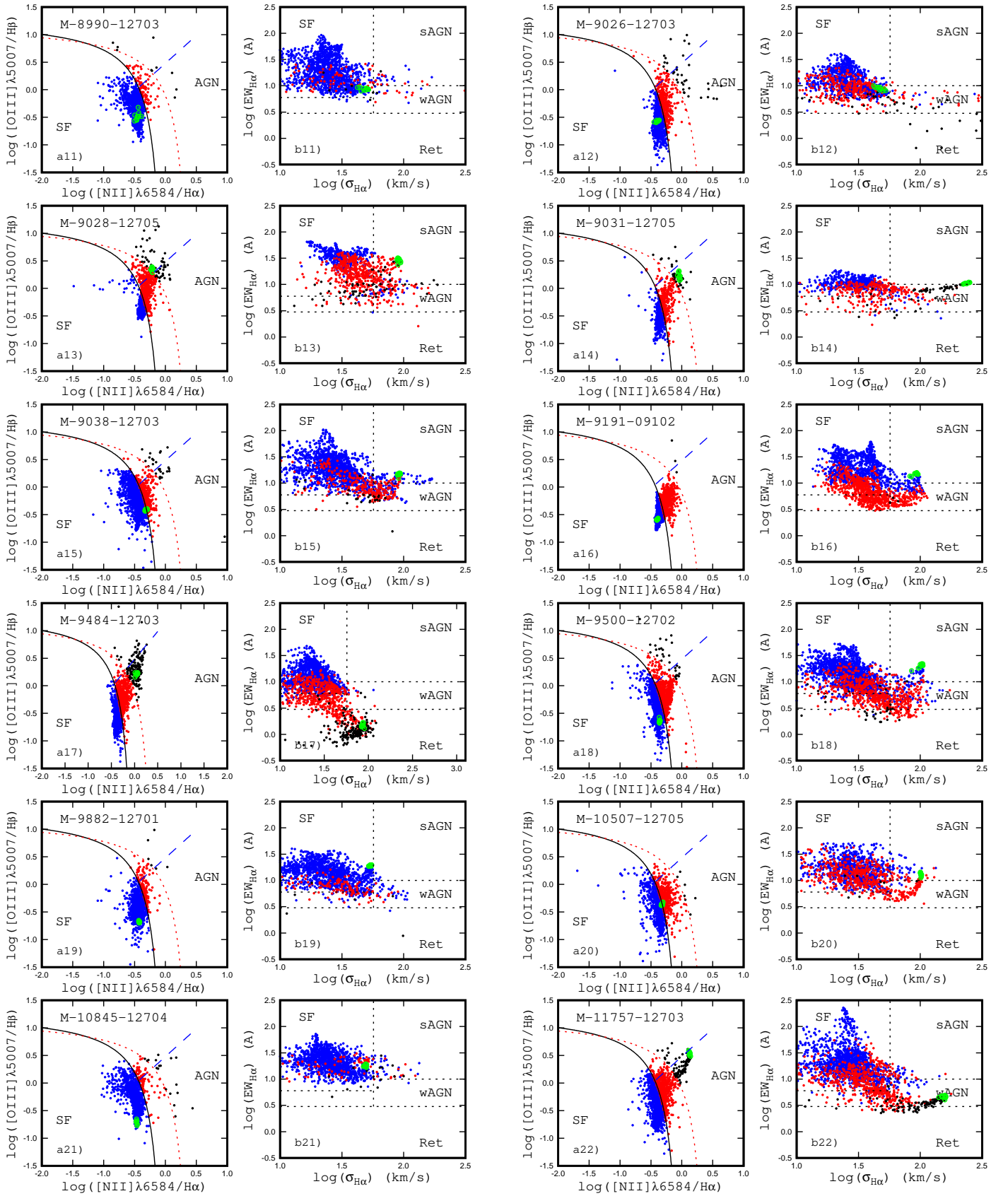


Fig. B.2. Same as Fig. B.1 but for other galaxies.

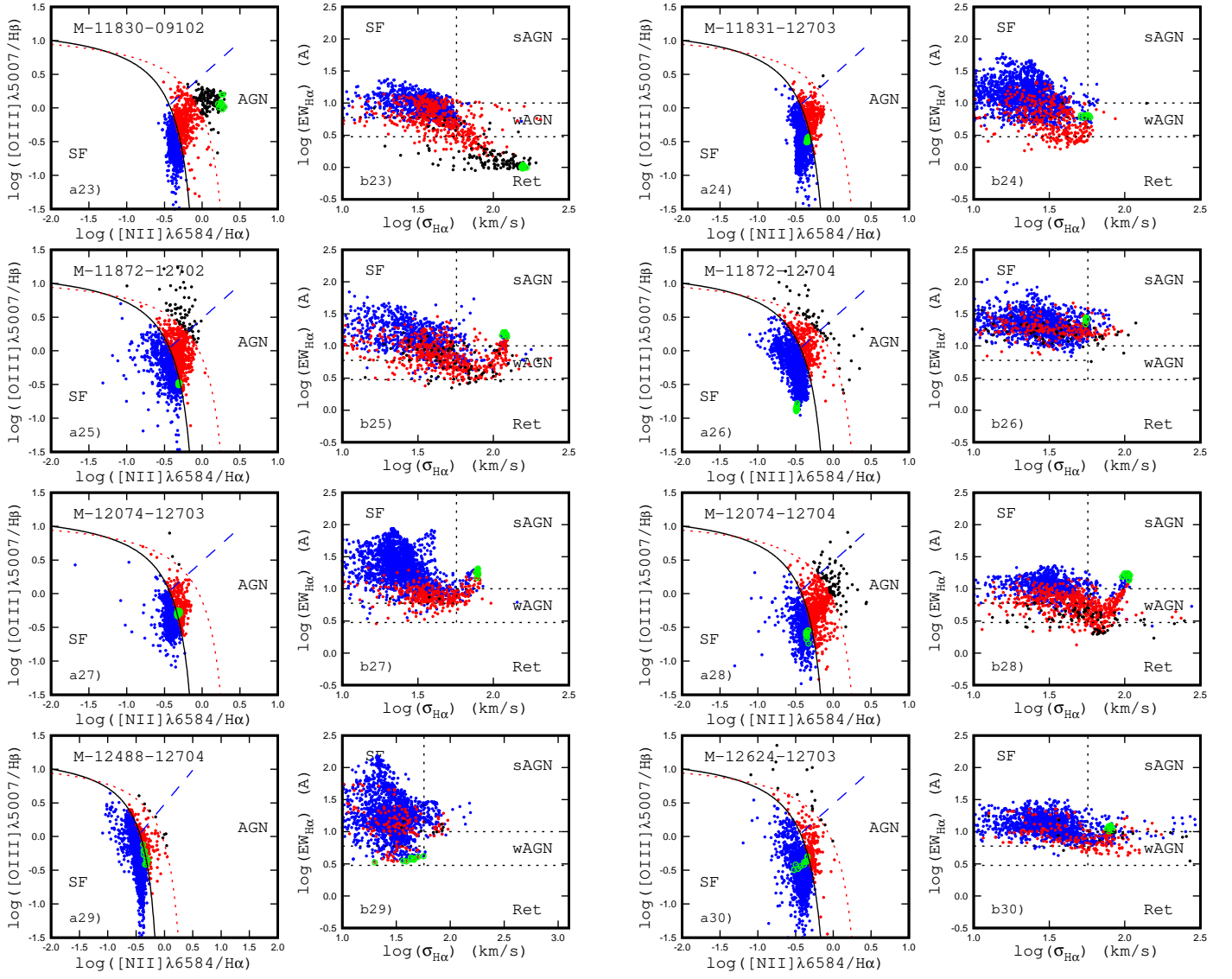


Fig. B.3. Same as Fig. B.1 but for other galaxies.