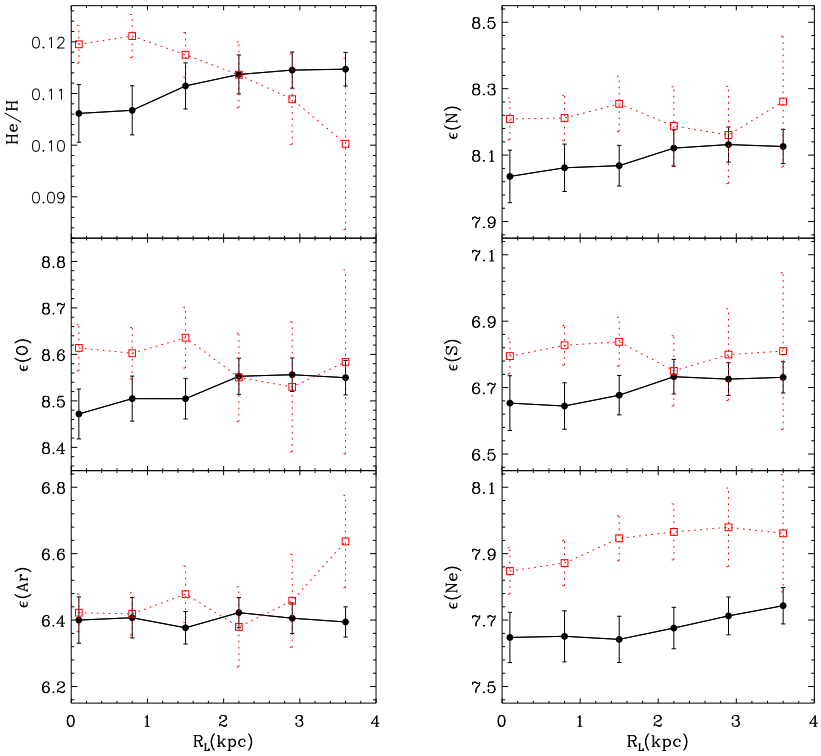

Fig. 3. The same as Figure 2 for the Z95 scale.

of 0.15 dex. For argon this difference is not clear, which is already expected since the ionization correction factor used to derive its abundance can lead to uncertainties larger than those for other elements.

3.2. *Kolmogorov-Smirnov test*

Our goal in this section is to find the distance that best characterizes the separation of the two groups, in the sense that the populations of each group should be as distinct as possible. In this case, we will be able to ascertain a value for the galactocentric distance of the bulge-disk interface based on the intermediate mass population represented by the PNe sample. In order to find such distance, we performed a Kolmogorov-Smirnov test for Groups I and II at each step of the procedure described above. The test returns the probabilities that the two groups are drawn from the same distribution. Small probabilities show that the cumulative distribution function of Group I is significantly different from Group II. The results are displayed in Figure 4. For each element the probability is shown as function of the limiting distance R_L. For each distance step, the left filled bar represents the SSV08 scale and the right empty bar the Z95 scale. Since we are looking for small probabilities, we can see from the figure that the lowest probabilities are achieved at 1.5 kpc for the Z95 distance scale for the elements O, S, Ar, and Ne. The probabilities for each element and distance are listed in Table 3 and the lowest values are highlighted in black. Again, it is clear that for the Z95 distance scale the lowest probabilities are achieved at 1.5 kpc for all the α-elements. On the other hand, SSV08 does not show a unique distance for the lowest probabilities. Indeed, considering only the α-elements, no distances are alike. Nevertheless, examining Figure 2 in detail, we can see that there is a step in the abundance radial distributions for the α-elements concerning the distance of 2.2 kpc. So that the safest conclusion we can draw is that $R_L < 2.9$ kpc based on the SSV08 distance scale.

3.3. *Resulting abundance distributions*

Adopting the separation distances obtained for each element and distance scale, namely 1.5 kpc for Z95 and 2.2 kpc for SSV08, the distribution of the abundances for each group are shown in Figures 5 and 6 for the Z95 and SSV08 distance scales, respectively. Empty histograms represent Group I objects, while filled histograms represent Group II objects. The number of objects used is also given for each plot.