able to use the *local plateau condition* i.e. to choose the γ_p values where the $\delta E(\gamma, p)$ curves have minimum for all the plateau curves shown. The shell correction values at the minima of the curves agree very well (within 500 keV) with the horizontal line representing the result of the semi-classical calculation. Since the σ variation of the $\delta E(\gamma_p, p)$ values in Eq. (24) is small the shell correction value calculated from the mean in Eq. (23) is well defined.

In Fig.6 we show an example for the double magic ^{132}Sn nucleus where the σ variation is smaller that 200 keV and the deviation from the semi-classical value Δ is less than 1 MeV. This is the largest deviation from the cases listed in Table II. One can observe in both Figs. 5 and 6, that the γ_p values, where the minima of the $\delta E(\gamma_p, p)$ appear are increasing with increasing p values. This can be compensated to some extent if we use the renormalized smoothing range Γ_p defined in Eq.(32).

The $\delta E(\gamma_p, p)$ plateau curves are very similar for most nuclei we calculated if we select the values of the first γ_p minima of the different p curves beyond $\gamma_{p,min}$ in Eq.(33). We identify the shell correction with the mean values of the $\delta E(\gamma_p, p)$ in Eq. (23) and its σ variation with the uncertainty of the shell correction.

In Table II we show the shell corrections for neutrons and for a set of medium and heavy nuclei resulted by the new smoothing procedure $\delta E_n(FR)$, and that of the generalized Strutinski procedure $\delta E_n(G)$. Their σ variations are in the third and in the fifth columns. In the last two columns we compare their values to that of the semi-classical procedure given in Ref.[13]. The differences from δE_{sc} are below 1 MeV for the new procedure which is a bit better agreement than it is by using the generalized Strutinski procedure. The average of the differences are 0.6 MeV and 0.8 MeV for these two procedure, respectively.

In Table III we show the similar results for protons, where the average of the differences from the semi-classical results are 0.4 MeV and 0.6 MeV for the new procedure and for the generalized Strutinski procedure, respectively. So the new procedure can be applied for protons as well.

These differences are not large neither for neutrons nor for protons. The result of the new procedure is generally closer to the semi-classical result if we approach the drip lines. See e.g. the ^{78}Ni, ^{122}Zr, ^{124}Zr nuclei for neutrons and the ^{180}Pb nucleus for proton. Therefore, we believe that the finite range smoothing allows us to approach the drip line closer than we can approach it by using the infinite range Gaussian weight function.

The basic advantage of the new method is however, that the determination of the proper