

A central problem of PCA is finding the right number of PCA components for reconstruction. Usually people look at a screeplot (dependence of the variance on the component index) trying to guess where the noise region starts. It might work but you should be aware that this is a *very subjective* style of treatment.

To stay on the objective basis, **temDM MSA** uses two independent methods - the inspection of a screeplot and the analysis of an anisotropy plot. Both algorithms are equipped with the automatic truncation of the principal components.

What is an anisotropy plot? This is in-house developed technique by **temDM MSA**. Noise might have the different nature but there is a property that should be conserved in any dataset. Uncorrelated noise must be isotropic in all directions of the factor space. To isolate the noise region, **temDM MSA** calculates the anisotropy of the consequent couples of PCA scatter plots and catches the border component where the anisotropy decays below a certain predefined threshold. All components with the anisotropy value below this threshold will be considered as isotropic, i.e. representing pure noise.

The truncation algorithm allows also for the fully automated processing flow to denoise your data! The **Just denoise** tool is designed for those who currently have no time or fun to learn all aspects of PCA but wish to denoise their spectrum-images without much thinking how it works exactly.

Just press a knob and enjoy the fully automated processing flow!

Even more: you can *import* an XEDS spectrum-image collected by Bruker or Velox *and then denoise* it in non-stop way by the singular-button click.

