UseCase.0041 (1.0)

Using Floyd-Steinberg Quantization

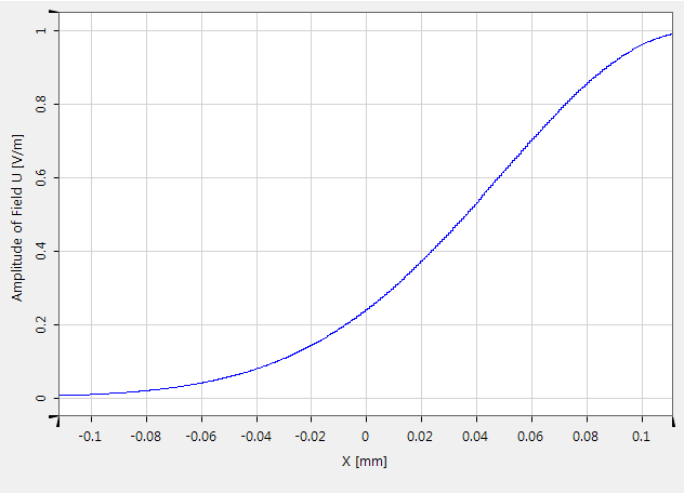
Keywords: error diffusion, algorithm

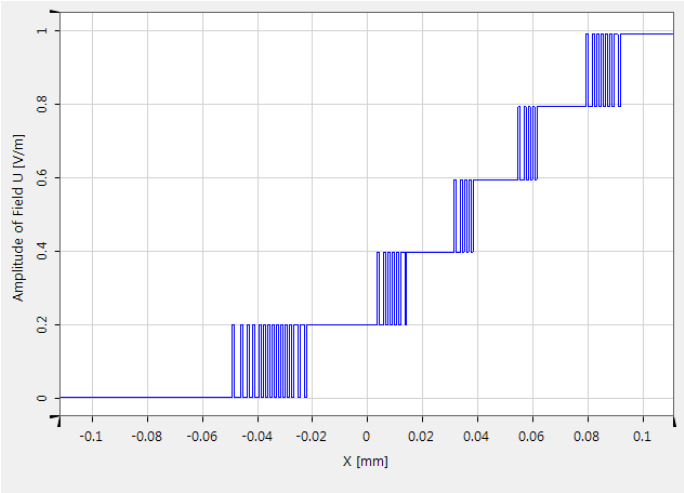
Description

- This use case explains how to use the Floyd-Steinberg quantization algorithm.
- Its characteristic error diffusion feature is mentioned.
- While the operation is defined for real-valued data as well as for complex-valued data, we just provide a real-valued sample here.

Principle of Floyd-Steinberg Quantization I

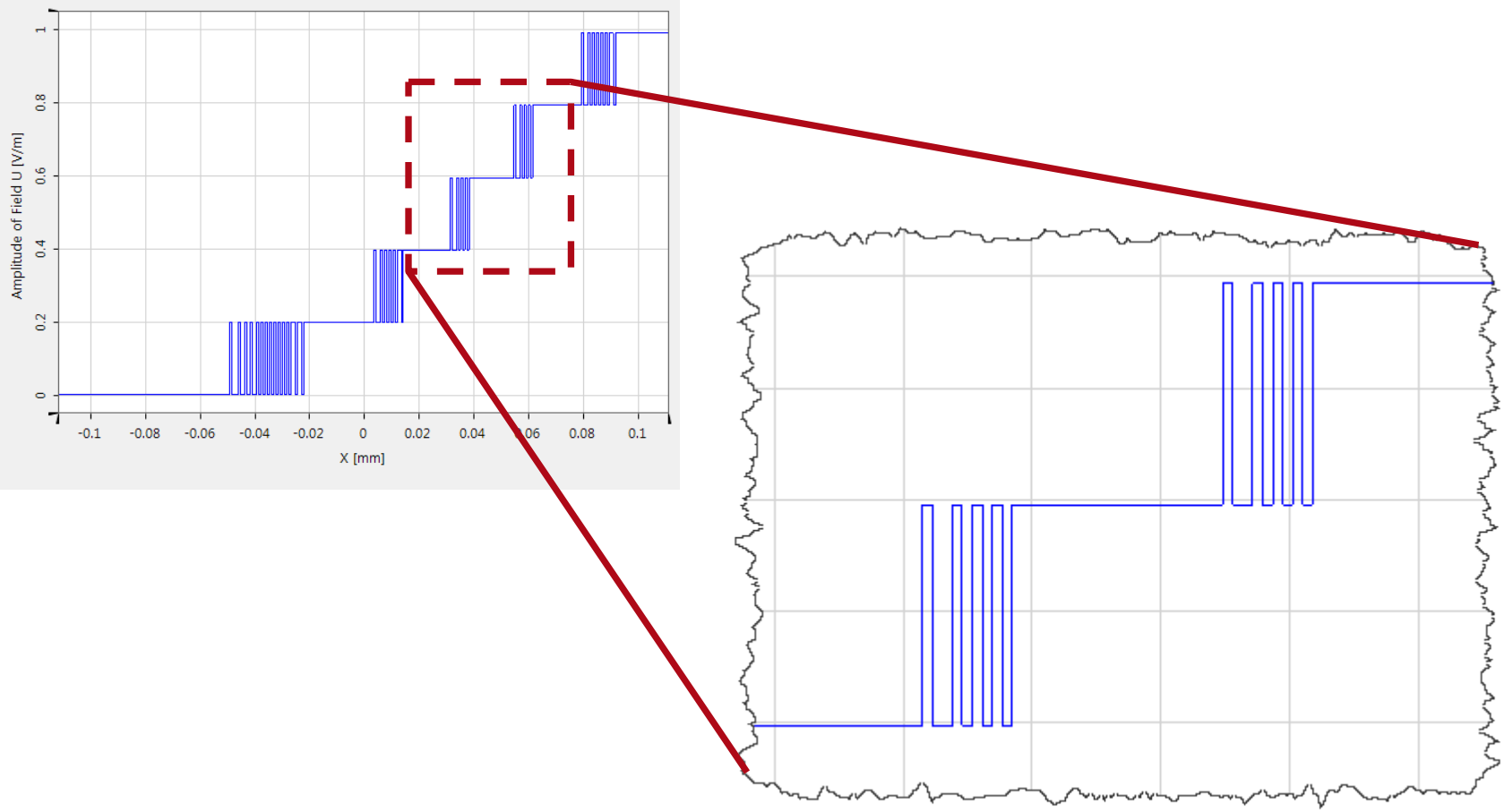
- Like every quantization algorithm, the Floyd-Steinberg quantization creates discrete data with a given number of levels.
- But the quantization based on the Floyd-Steinberg algorithm uses a special kind of error diffusion process.





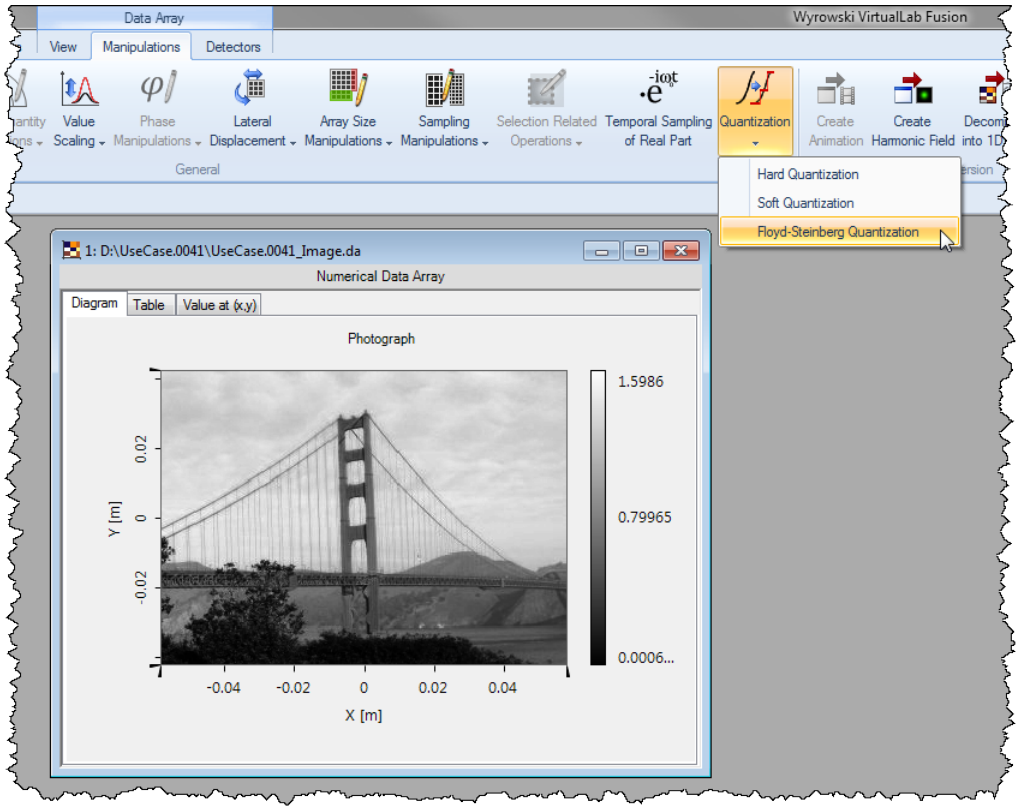
Principle of Floyd-Steinberg Quantization II

The error diffusion leads to some kind of oscillating values.

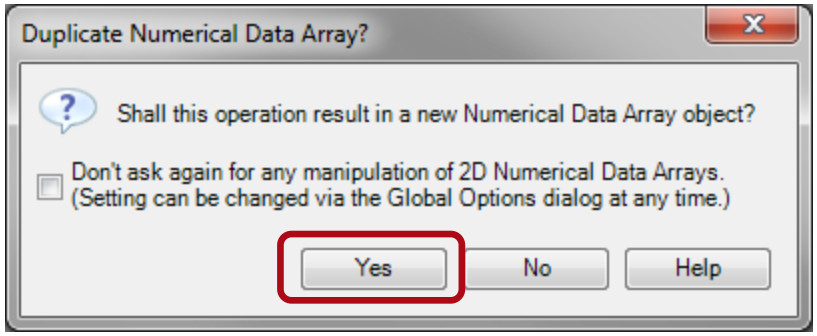


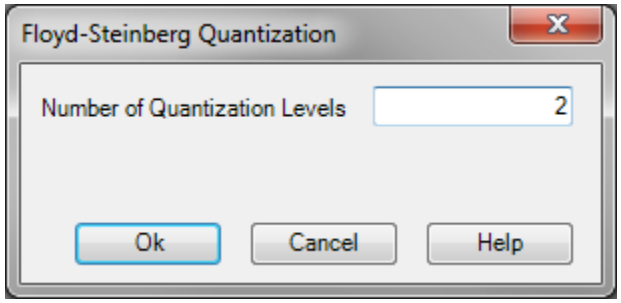
Example

Via the menu item Manipulations > Quantization > Floyd-Steinberg Quantization the desired operation can be started.



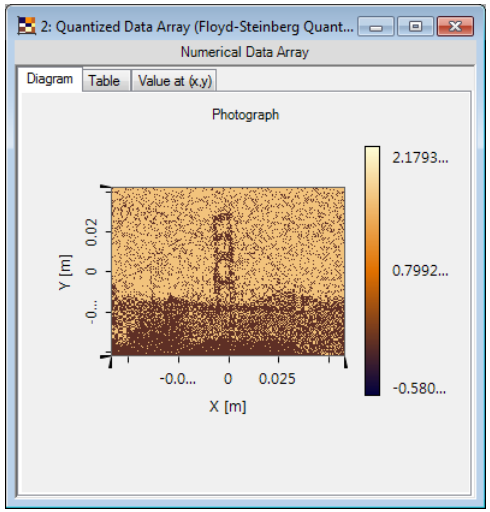
Configuration of the Operation

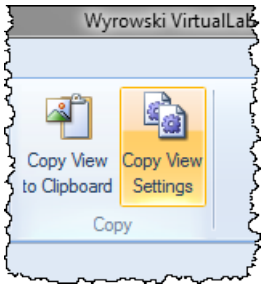


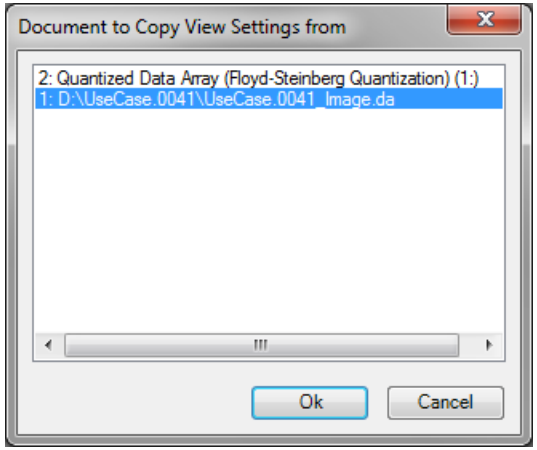


- As for every manipulation of a Numerical Data Array, the user can decide whether or not a new object shall be created.
- We choose „Yes“ here.
- The actual configuration dialog of the quantization asks for the number of quantization levels.
- Note: A number of zero levels will leave the data unmodified.

Enhancing the Result View







- The result of the operation is displayed using default view settings. In order to get a better impression, we will copy the original object‘s view settings.
- This can be done via View > Copy View Settings.
- Then, the original Data Array has to be selected.

Evaluating the Result

The typical pattern of a Floyd-Steinberg Quantization result can be seen.