Walsh Transform, Frequency Domain Filtering
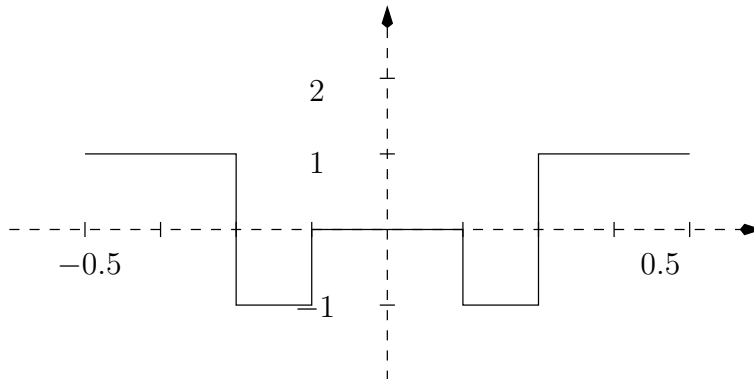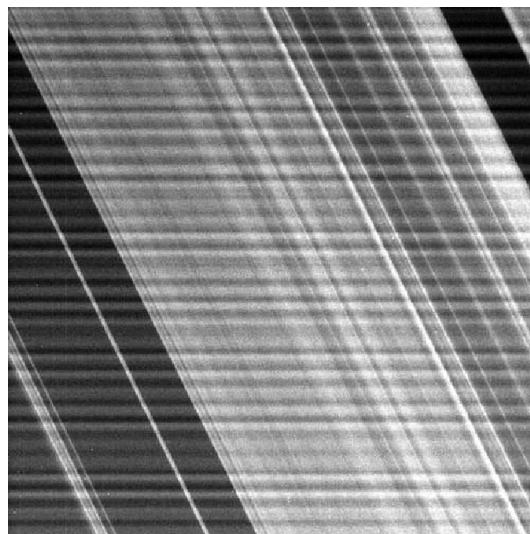
Exercise 21 Determine the first eight coefficients of the Walsh transform for the depicted signal:

Exercise 22 **Programming Task:** A space probe investigating the Saturn sends the following image (©NASA) of the Saturn rings to the NASA Headquarter:

Unfortunately the image is superimposed with a distinct horizontal noise pattern. To restore the original image, do the following:

- Investigate the power spectrum of the image to identify the components responsible for the noise (cmp. also lecture about feature extraction and Fourier Transform).

- Write a filter mask that blocks the corresponding noise components.

- Use the filter mask to create a filtered spectrum, and transform the image back into the spatial domain.