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für Radioastronomie

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SpecPol:
A Polarization Core for the XFFTS

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FFTS development history

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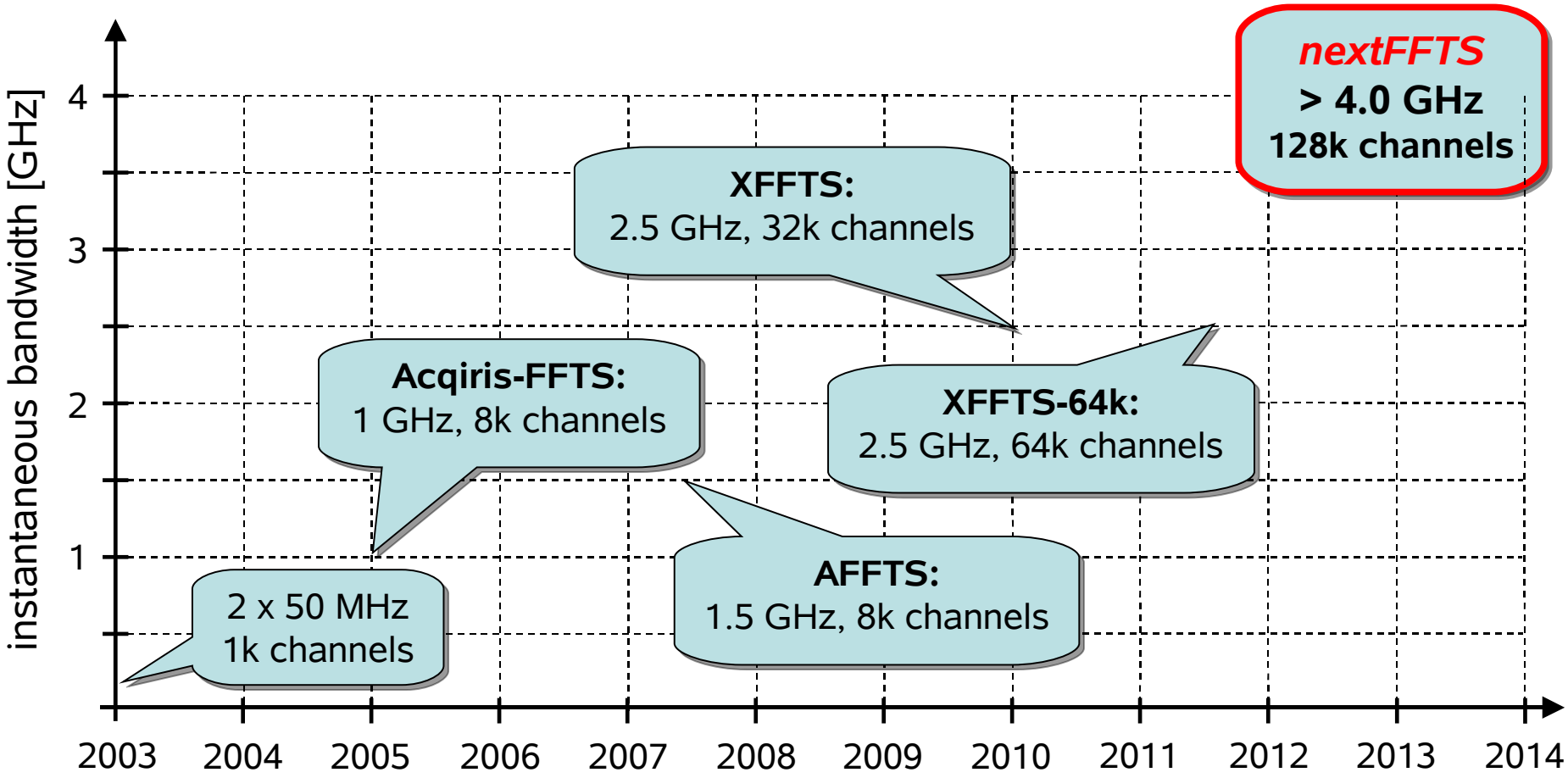

Fast Fourier Transform Spectrometer (FFTS)

1. Generation: AFFTS – 1.5 GHz BW, 8K channels

2. Generation: XFFTS – 2.5 GHz BW, 32K channels
XFFTS2 – 2.5 GHz BW, 64K channels

3. Generation: *nextFFTS* – 4 GHz BW, 128K channels
+ IF sampling (4 – 8 GHz)
+ digital sideband separation

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XFFTS2 :: 64k spectral channels

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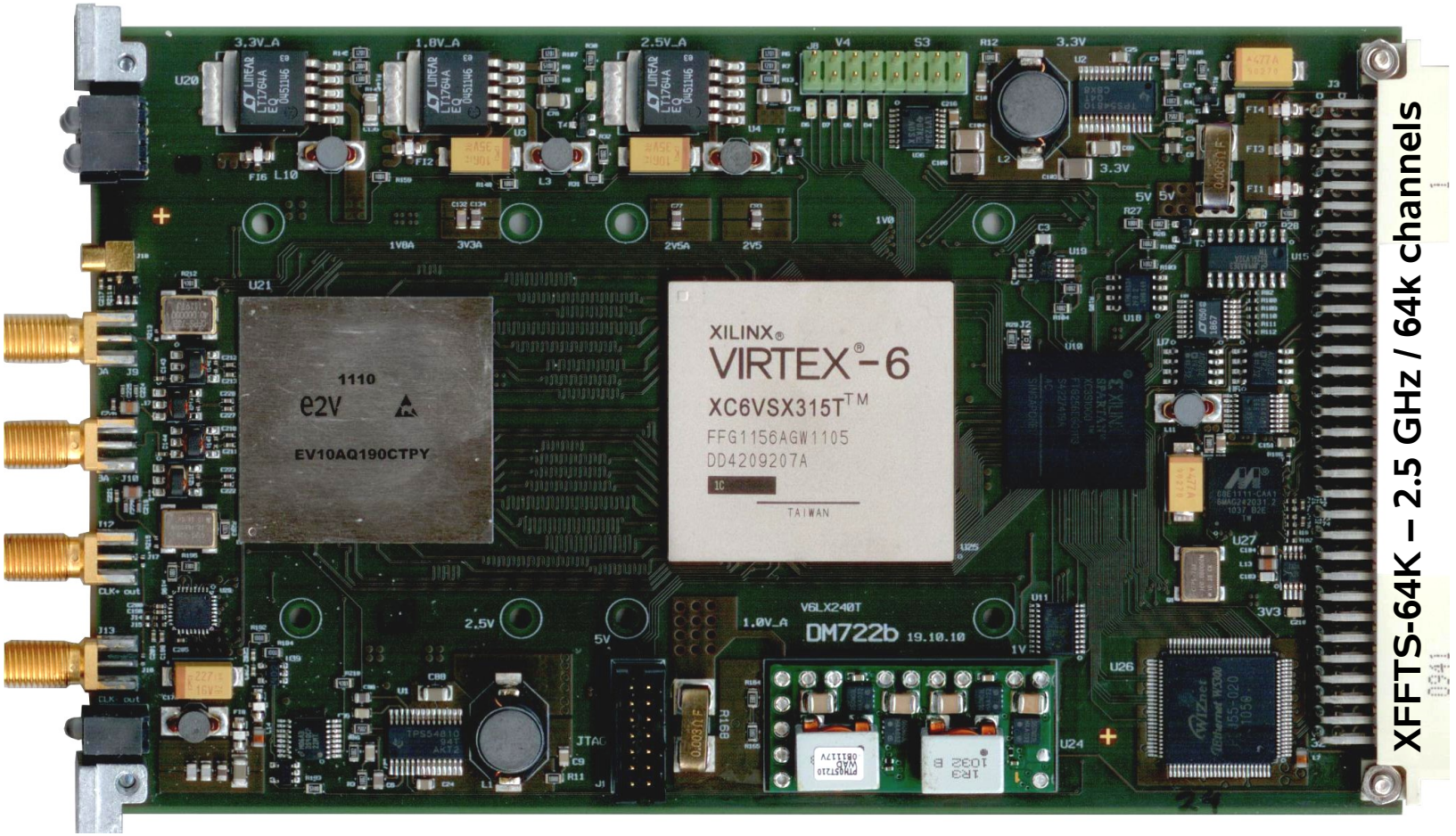
GREAT

XFFTS2: 2.5 GHz bandwidth / 65536 channels (ENBW 44 kHz)



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NEW!

XFFTS :: SpecPol-Core (full-Stokes)

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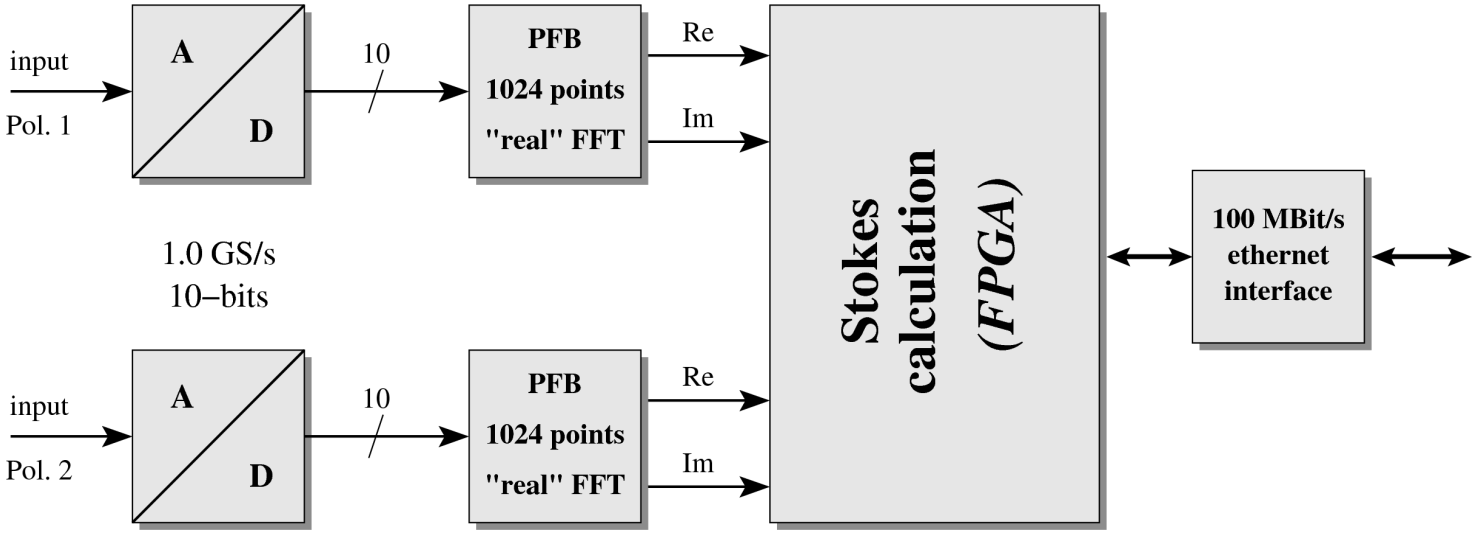

Linear polarization

$$\begin{bmatrix} I \\ Q \\ U \\ V \end{bmatrix} = \begin{bmatrix} |A|^2 + |B|^2 \\ |A|^2 - |B|^2 \\ 2\,\Re\{AB^*\} \\ 2\,\Im\{AB^*\} \end{bmatrix}$$

Circular polarization

$$\begin{bmatrix} I \\ Q \\ U \\ V \end{bmatrix} = \begin{bmatrix} |A|^2 + |B|^2 \\ 2\,\Re\{AB^*\} \\ 2\,\Im\{AB^*\} \\ |A|^2 - |B|^2 \end{bmatrix}$$

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AFFTS :: *The Effelsberg Array-FFTS*

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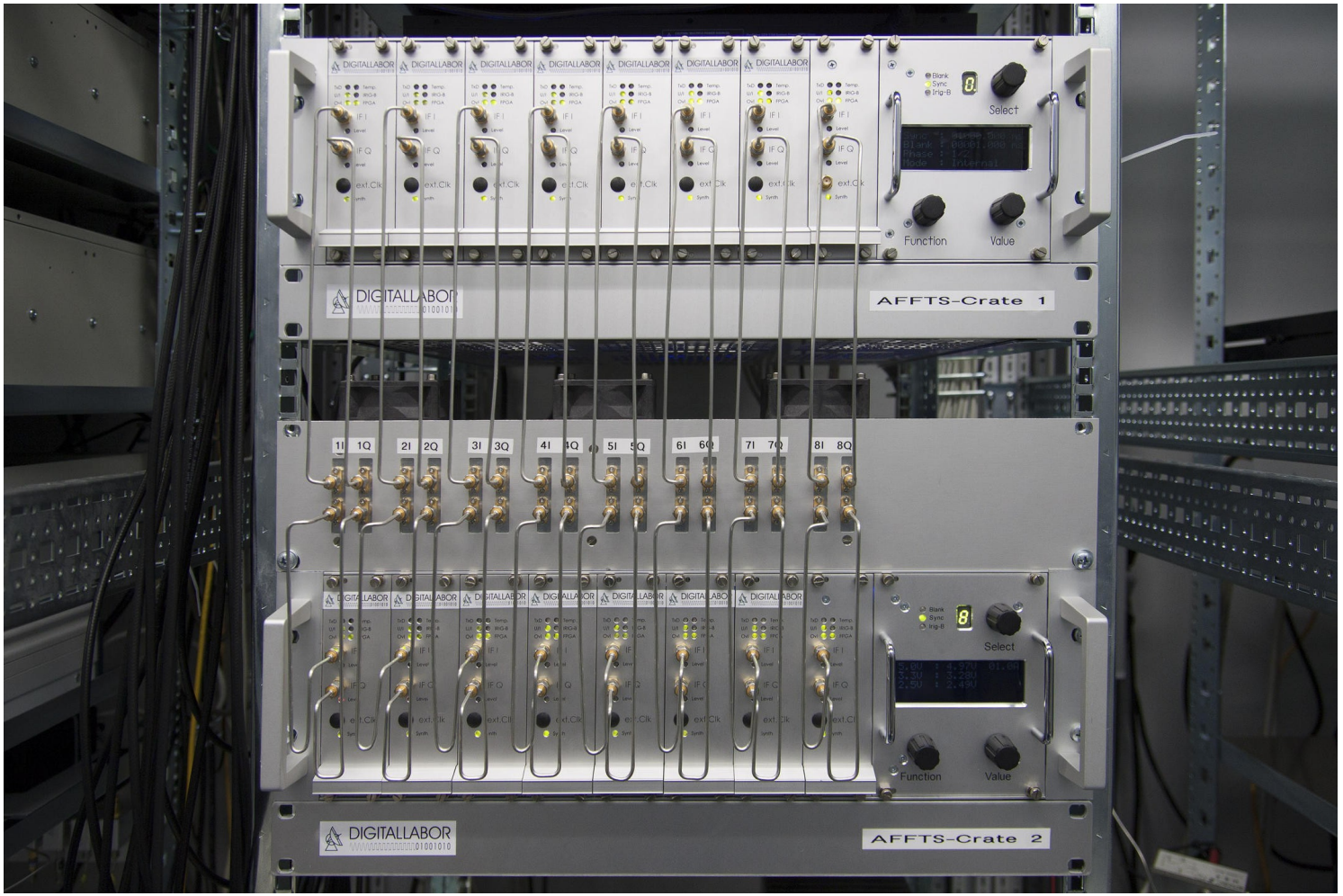

Norbert Tacken