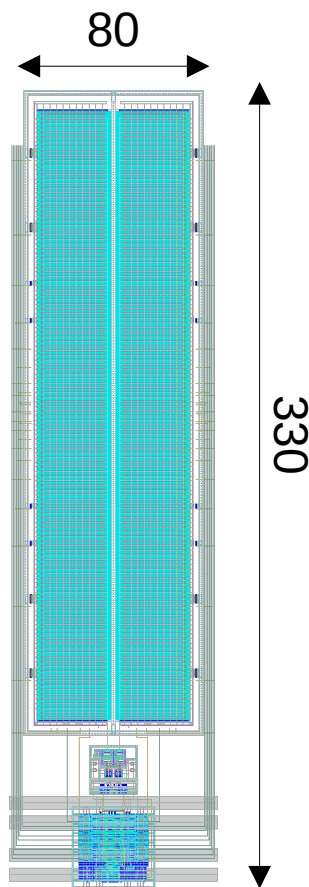


# Data converters for high frame rate imaging detectors

Kennedy Caisley<sup>1</sup>, Hans Krüger<sup>1</sup>, Jochen Dingfelder<sup>1</sup>, Bart Dierickx<sup>2</sup>

1. University of Bonn, DE

2. Caeleste, Mechelen, BE



65nm → 28nm

Design	CORDIA	FRIDA
ADC resolution	10-bit	10/12-bit
Conversion rate	2.5MHz	10 MHz
Area of one ADC	80x330 $\mu\text{m}^2$	50x200 $\mu\text{m}^2$
Power of one ADC	30 $\mu\text{W}$	100 $\mu\text{W}$
FOM_csa (conv/sec/area)	95 Hz/ $\mu\text{m}^2$	5000 Hz/ $\mu\text{m}^2$
FOM_epc (energy/conv)	12 pJ	10 pJ
FOM_ppa (power/area)	0.11 W/ $\text{cm}^2$	5.0 W/ $\text{cm}^2$
ADC qty Mpix @ 100 KHz	40000	10000
ADCs total pixel rate	100 Gpx/s	100 Gpx/s
ADCs total data rate	1 Tb/s	1 Tb/s
ADCs total area	10.5 $\text{cm}^2$	0.2 $\text{cm}^2$
ADCs total power	1.2 W	1.0 W

