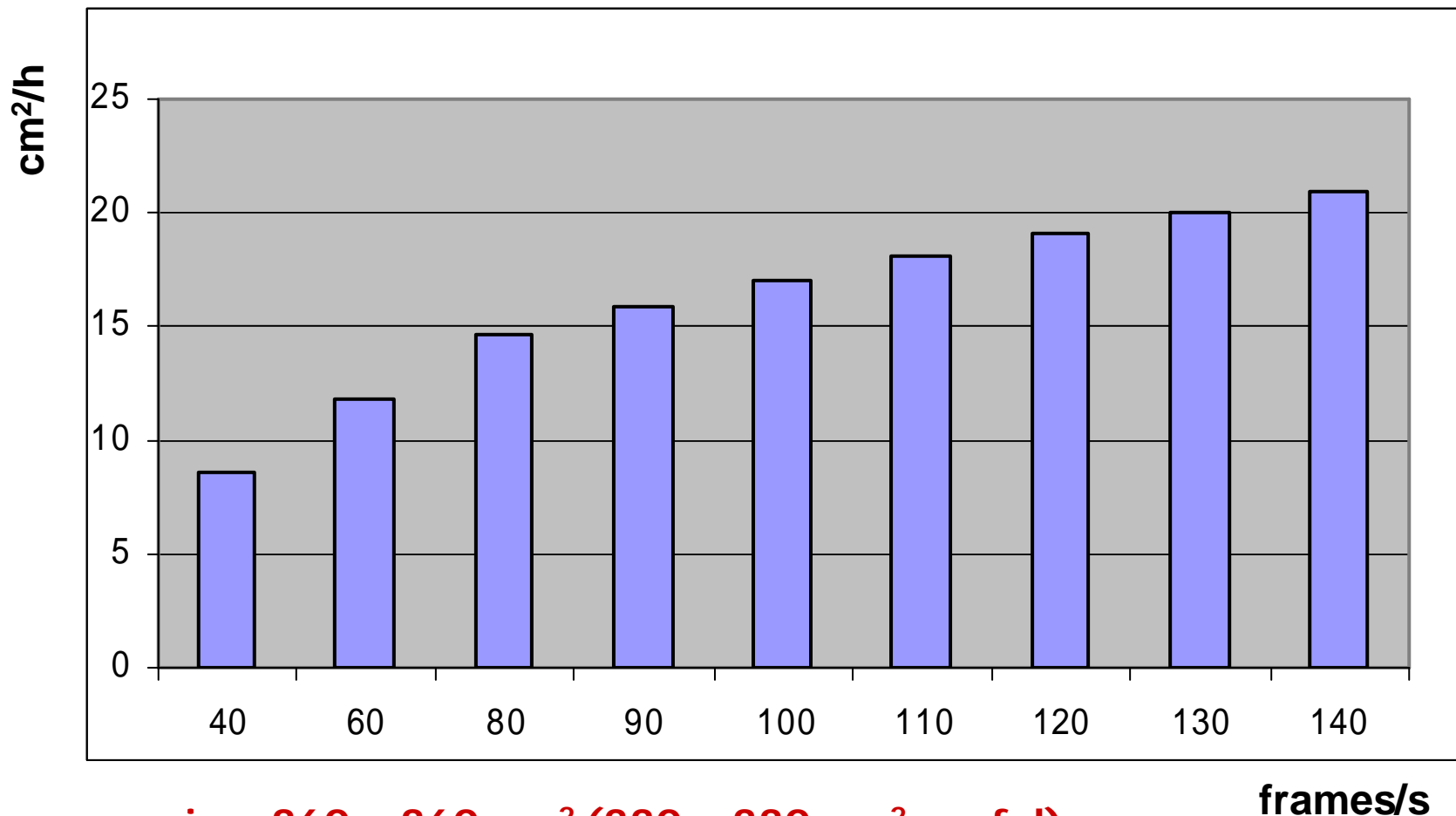**Preliminary Test with *FAST* Cmos camera**
Hardware and Software compatibility
Use of non linear LookUpTable (LUT)

Status of the *Custom Cmos* camera prototype

N. D'Ambrosio, Frascati October 2002

WE HAVE TESTED THE ABILITY OF HARDWARE AND SOFTWARE SYSTEM TO HANDLE VERY FAST CMOS CAMERA AT MEGAPIXEL RESOLUTION

Frame Rate Vs. Scanning Speed

- **view 360 x 360 mm^2 (330 x 330 mm^2 useful)**

- **80 ms to change view**

- **1 emulsion side - 15 layers**

CMOS Camera

1. **R&D camera optimized to be interfaced with Genesis board**

2. **Commercial Camera made by Mikrotron**

Both use the same CMOS Sensor from Photobit

CMOS SENSOR Specification:

PHOTOBIT PB-MV13	1280 × 1024 pixel	12 × 12 mm^2/pixel	fps up to 500 10 channels 66 MHz	15.4 × 12.3 Area (mm^2)

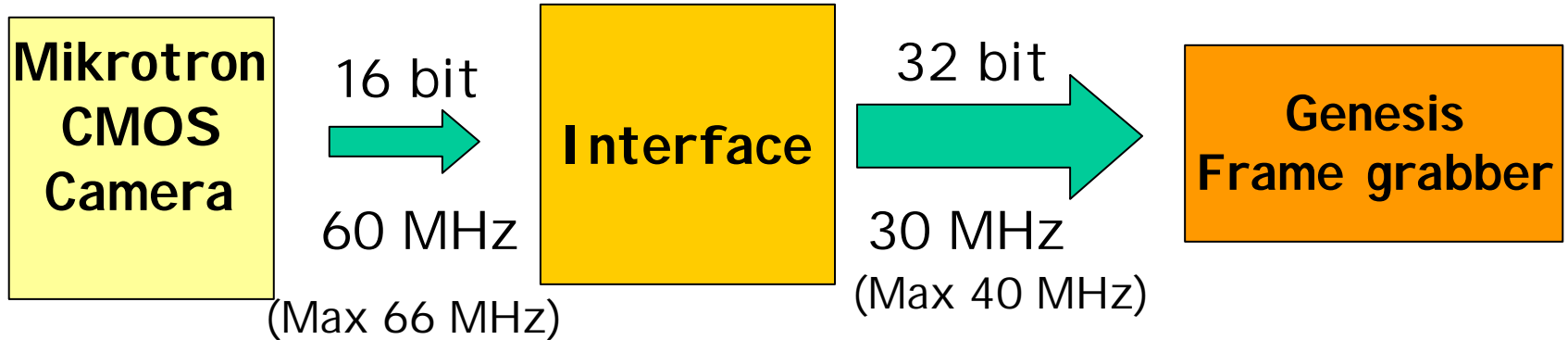**Preliminary test done at 87 frames/seconds 1280 X 1020 pixel**

TEST SETUP:

Mikrotron CMOS Camera mod. MC1300
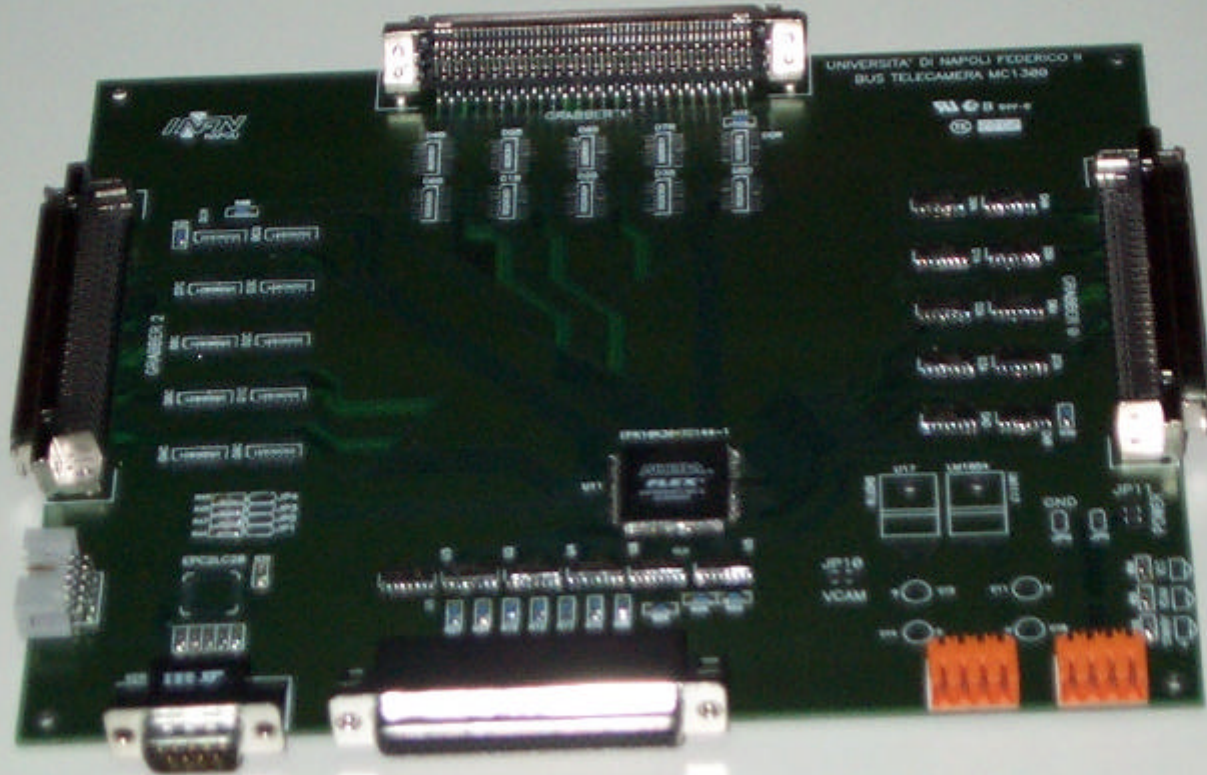
Custom interface (Camera – Genesis board)

Asynchronous acquisition system with test module program

Mikrotron CMOS Camera

16 bit → 60 MHz (Max 66 MHz)

Interface

32 bit → 30 MHz (Max 40 MHz)

Genesis Frame grabber

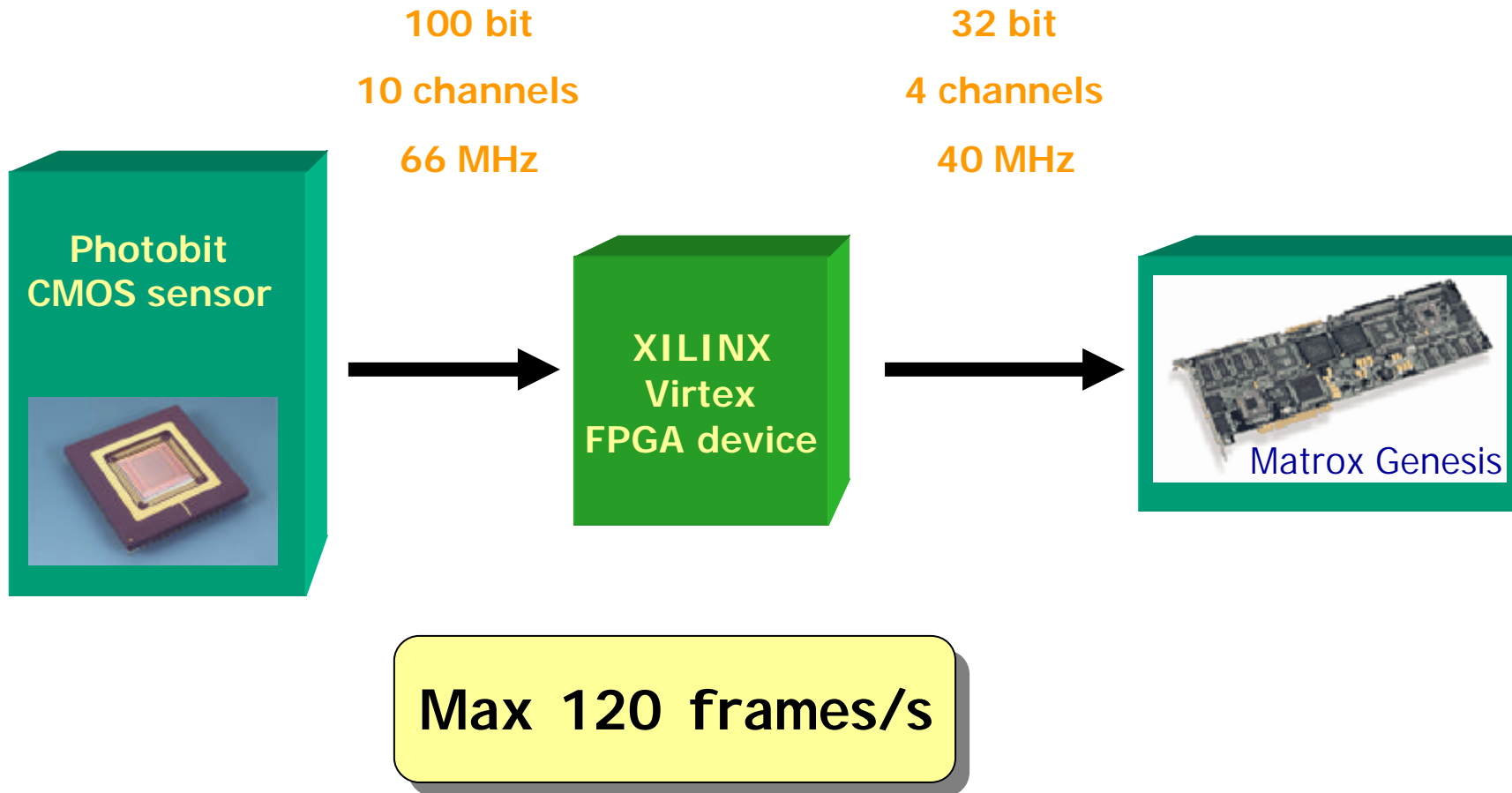# First Prototype of the interface

THE TEST WAS PERFORMED USING ASYNCHRONOUS

SOFTWARE OPERATION TO AVOID

LOSS OF FRAMES DUE TO THE OPERATIVE SYSTEM

TASK SWITCHING DELAY

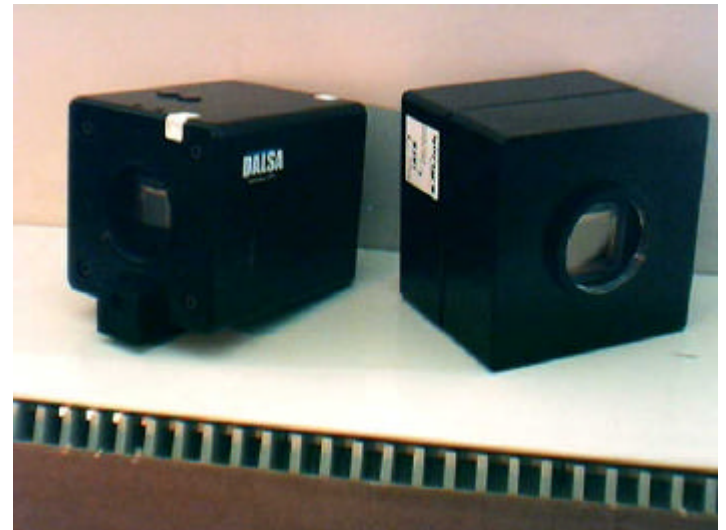87 frames/s -> 11,5 ms/frame
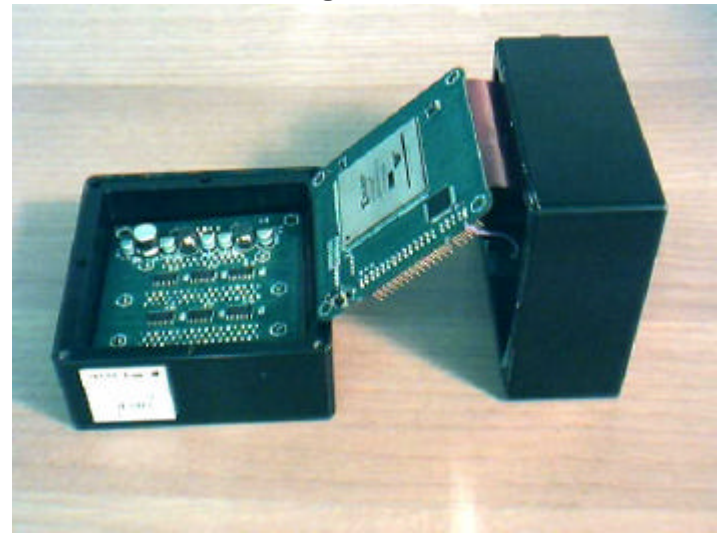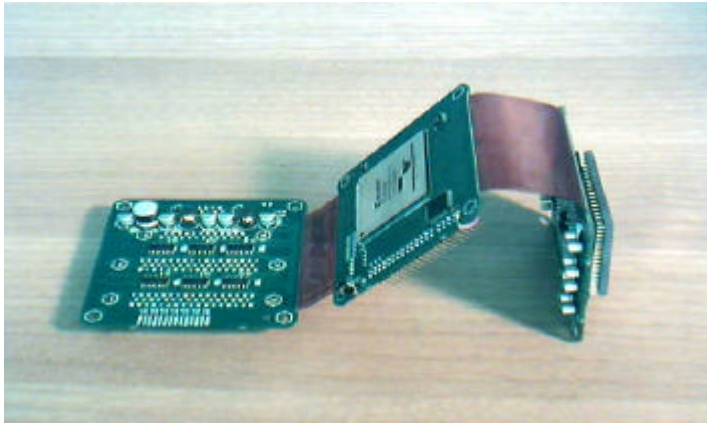
O. S. switching delay ~ 10 ms

Custom CMOS Camera (R&D)
Bologna and Napoli

100 bit

10 channels

66 MHz

32 bit

4 channels

40 MHz

Photobit CMOS sensor

XILINX Virtex FPGA device

Matrox Genesis

Max 120 frames/s

CMOS Camera prototype

Bologna

CMOS Camera prototype

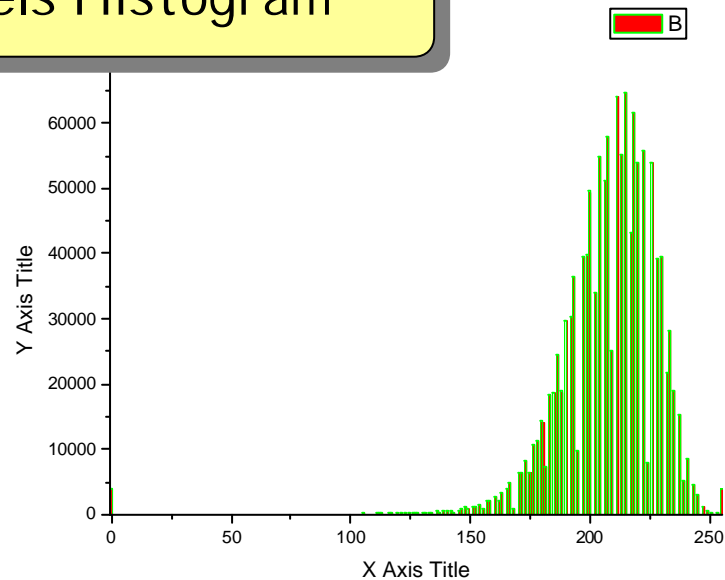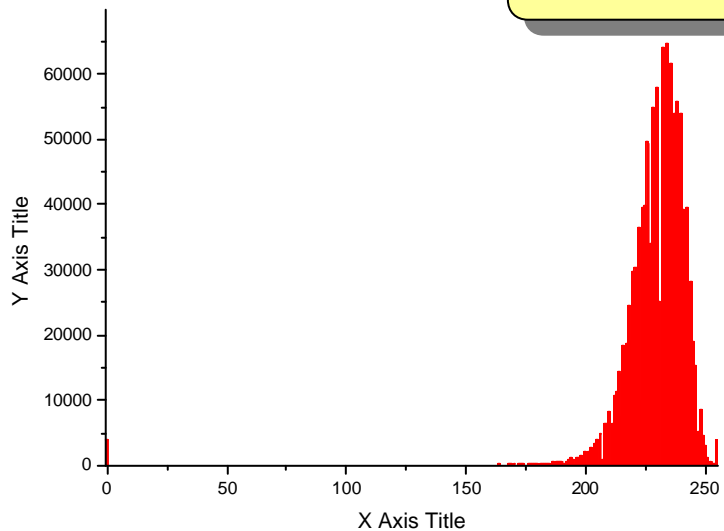**First Emulsion Image**

Tested at 75 frames/s

NON LINEAR LOOK UP TABLE

TO IMPROVE THE CONTRAST AND
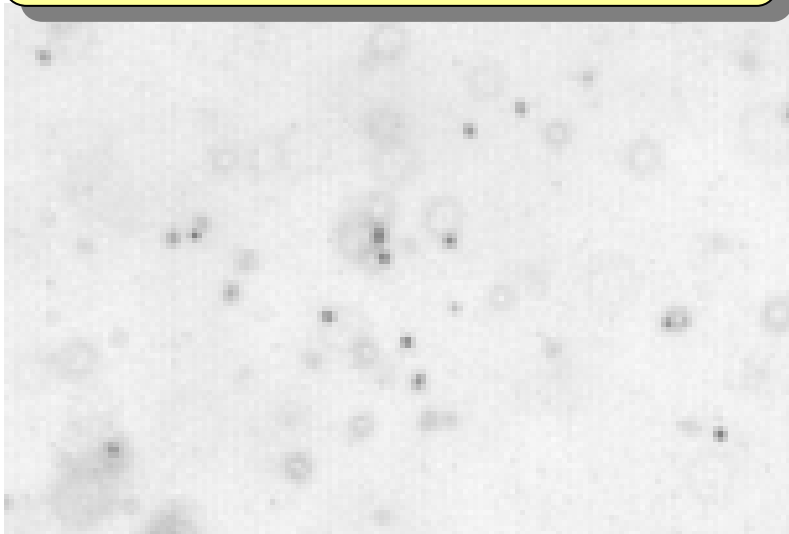
PEAK RESPONSE OF CMOS IMAGES

**First test made
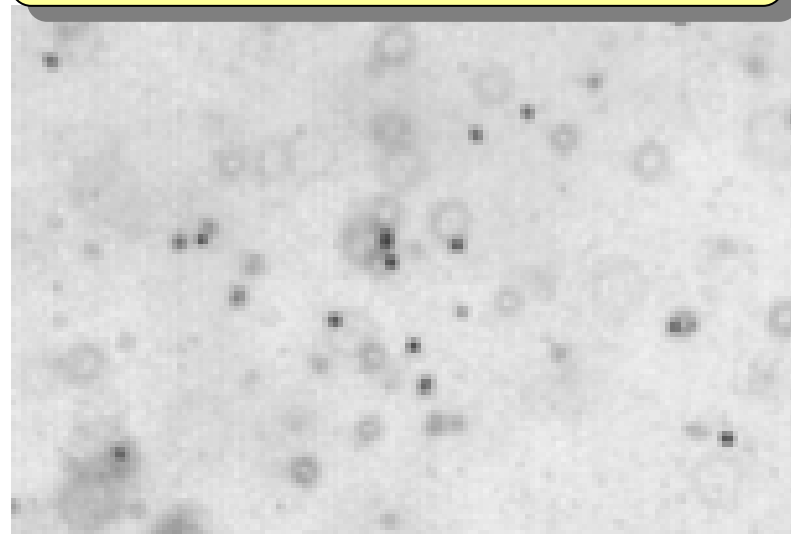with square function LUT**

The results are very promising

Gray Levels Histogram

Linear LUT

Square LUT

43X29 mm

N. D'Ambrosio, Frascati October 2002

CONCLUSION

FAST CAMERA SUCCESSFULLY TESTED

87 frames/s

CUSTOM CMOS CAMERA AT 120 frames/s IS COMING

NON LINEAR Look Up Table VERY PROMISING