HESPE Deliverable 4.2
Specification of optimal applicability conditions for spectroscopy, imaging and imaging spectroscopy
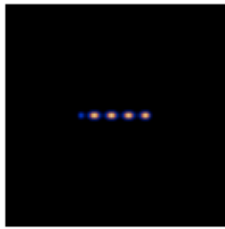
Imaging Test

Reconstruction Methods

- CLEAN DEFAULT

- CLEAN ENHANCED

- PIXON

- Forward fit for visibilities (VIS FWD)

- Maximum Entropy (MEM_NJIT)

- UV_SMOOTH

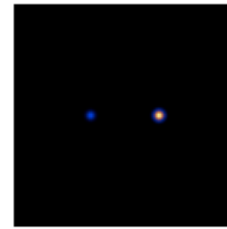- Expectation Maximization (EM)

Test images

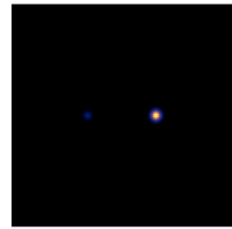**Case A**   **Case B**   **Case C**   **Case D**   **Case E**

Line source
(15 arcsec x 1 arcsec)

Constant intensity   Varying intensity

Dynamic range test:
two point sources
(2 arcsec size each separated by 20 arcsec)
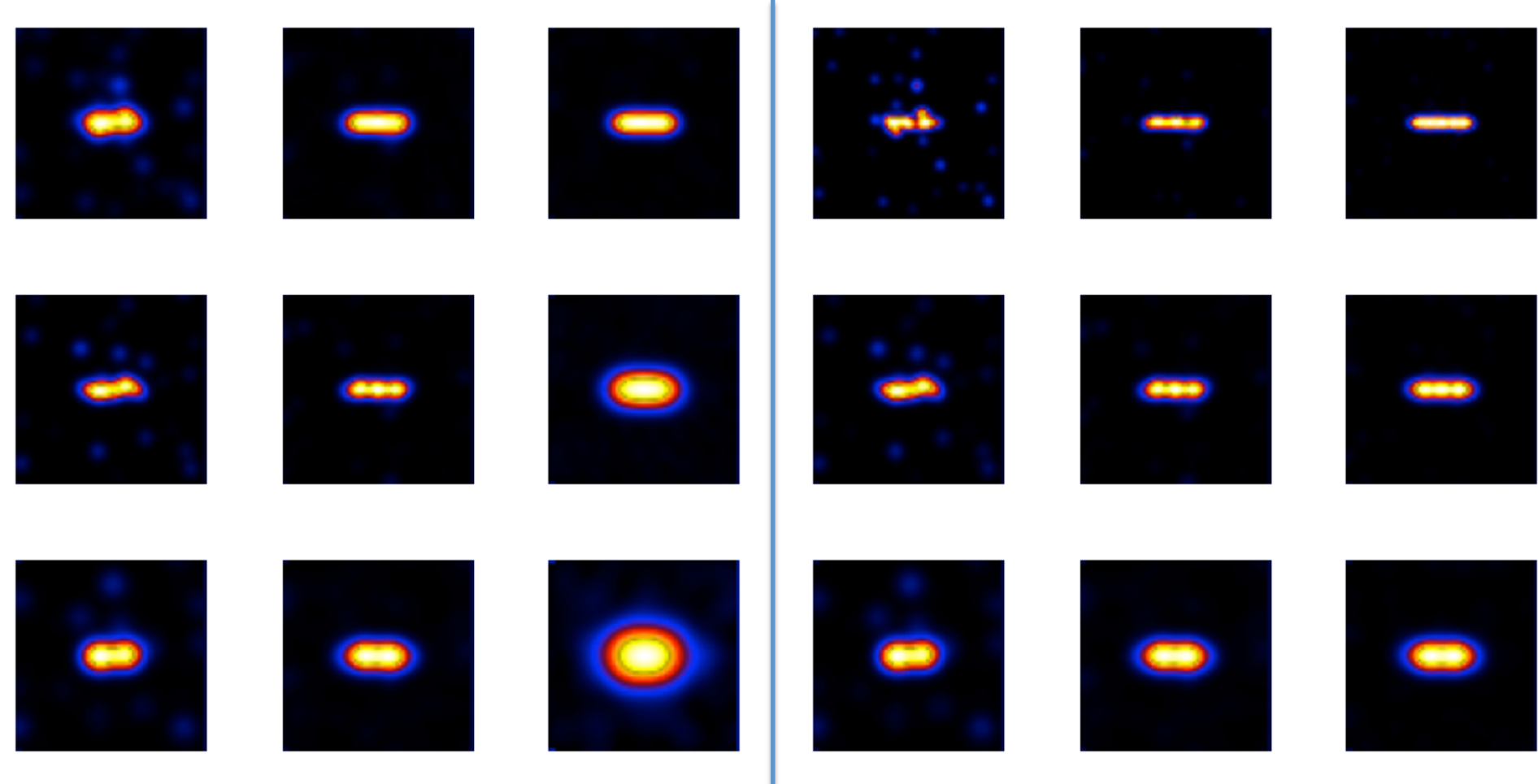Flux ratio

1   5   10

Configurations, statistics and panel display

- three combinations of detectors
  - detectors from 1 through 9 (row 1)
  - detectors from 2 through 9 (row 2)
  - detectors from 3 through 9 (row 3)

- three levels of statistics
  - low (column 1)
  - medium (column 2)
  - high (column 3)

CLEAN DEFAULT

CLEAN ENHANCED

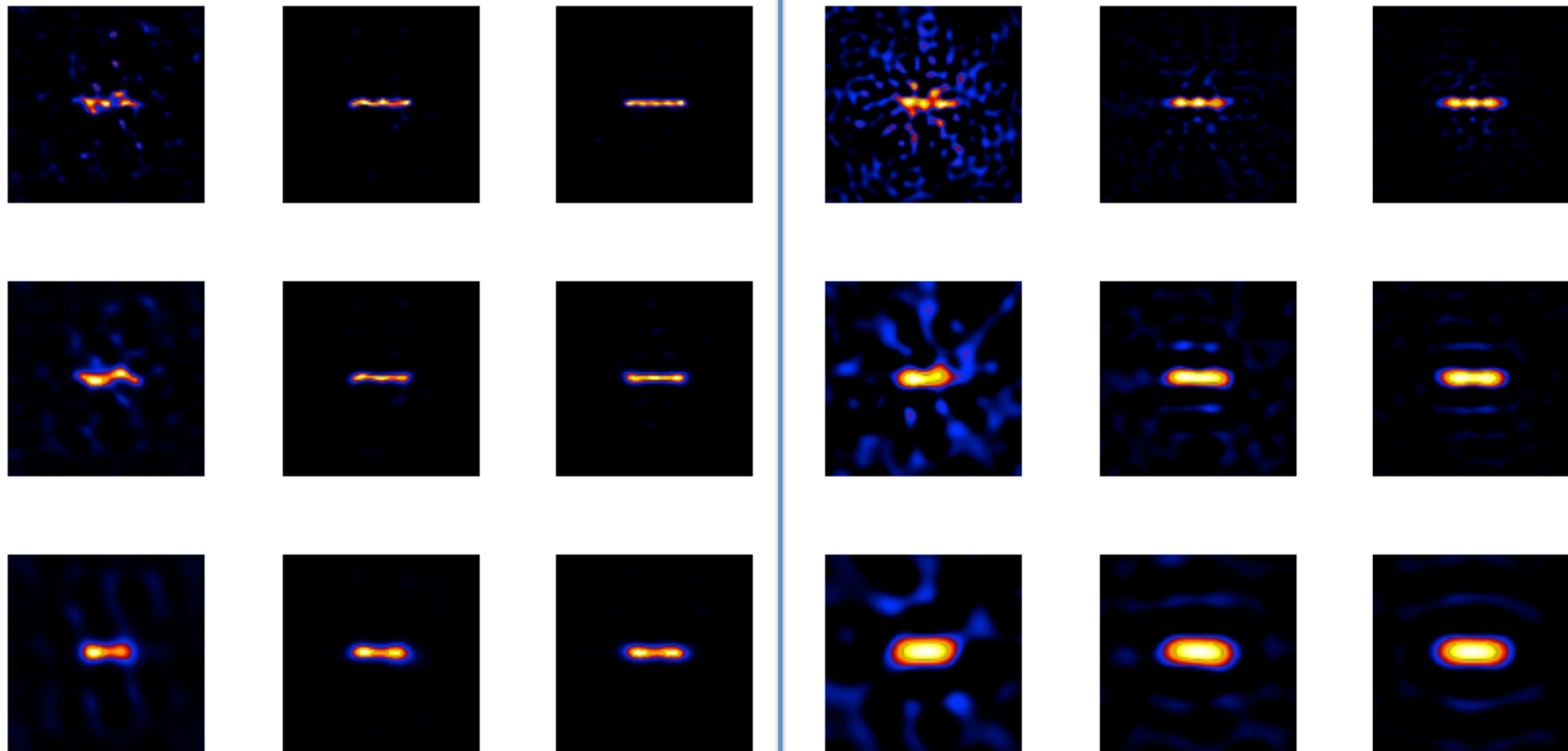**Case A: Line source (constant intensity)**
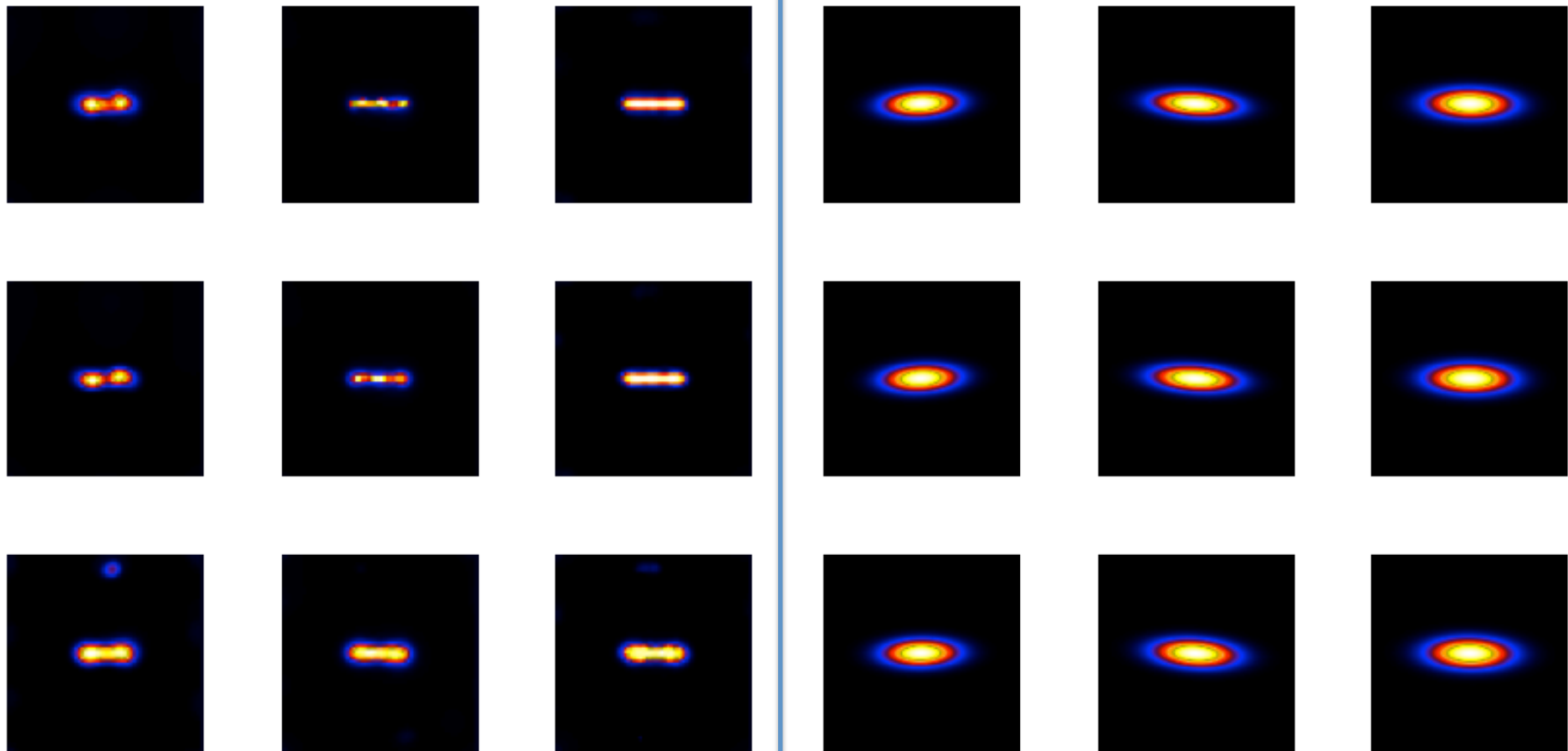
PIXON

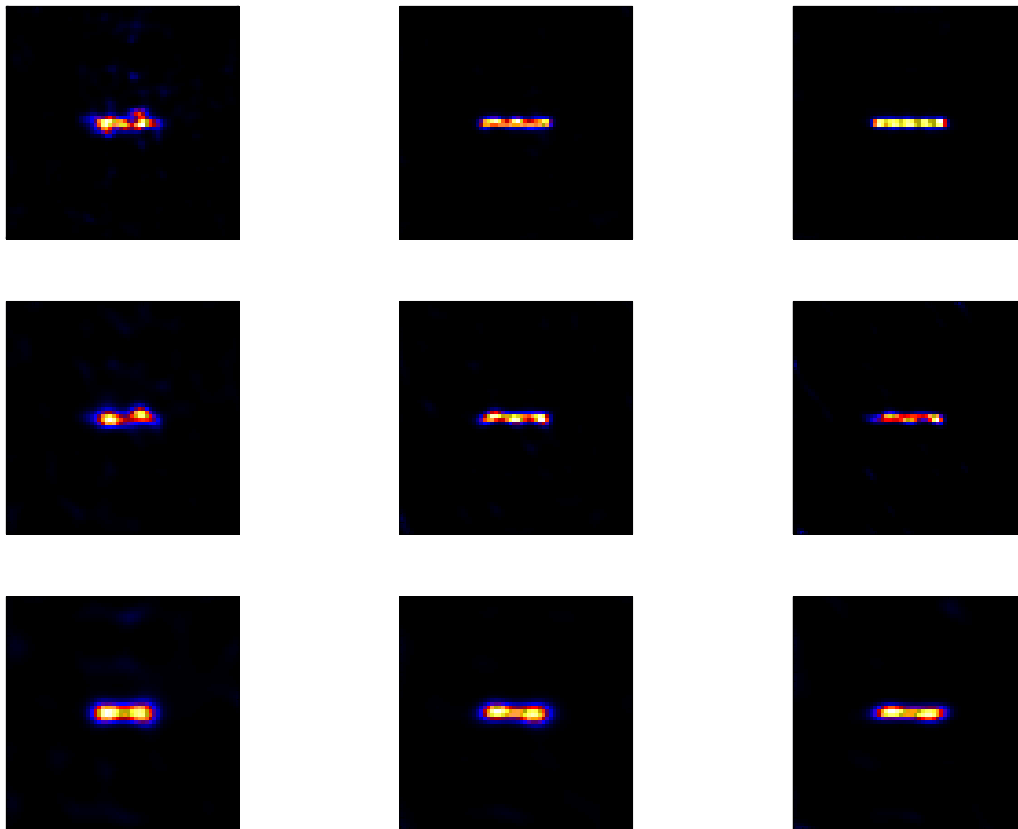**VIS FWD**

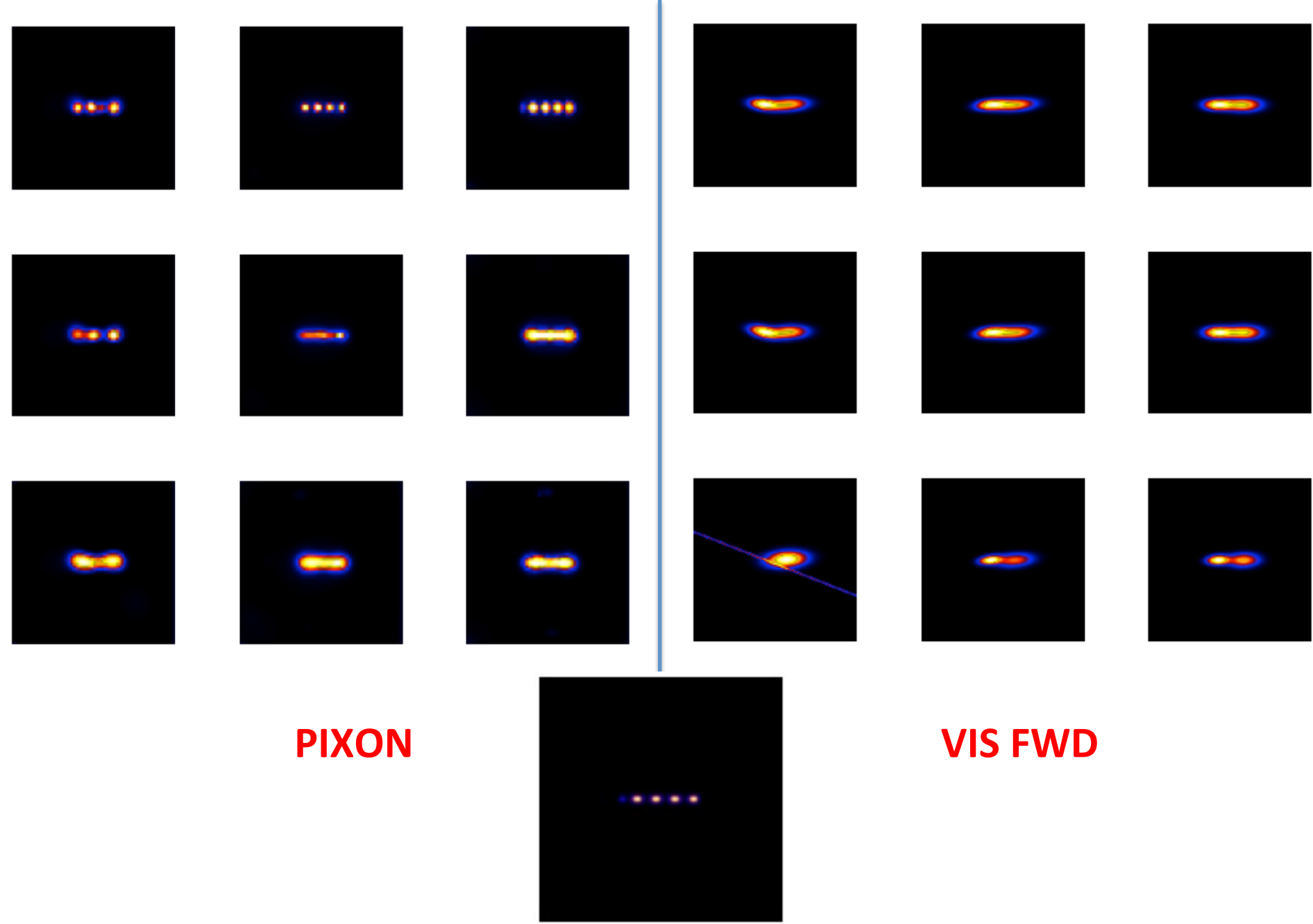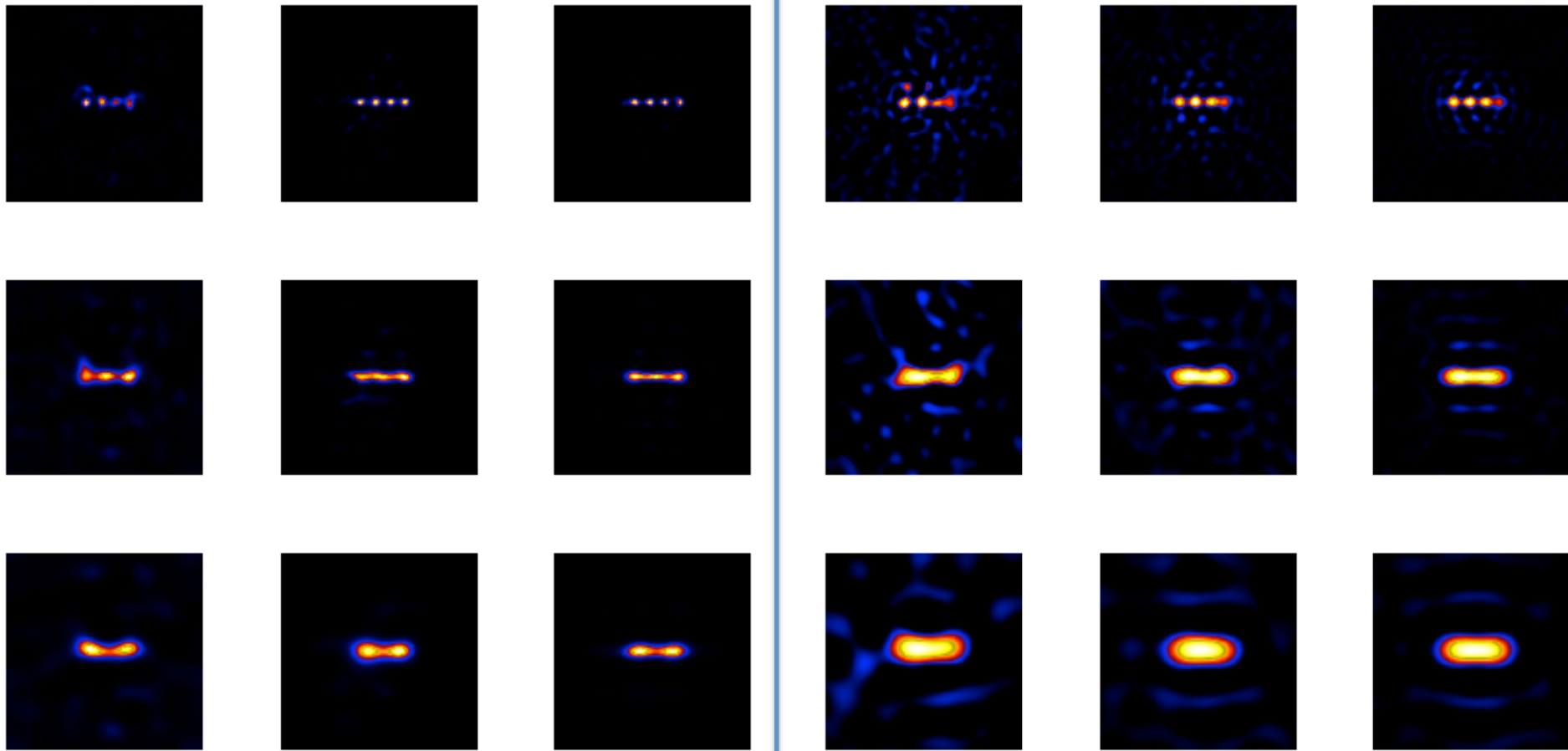**Case A: Line source (constant intensity)**

MEM_NJIT

UV_SMOOTH

Case A: Line source (constant intensity)

EM

Case A: Line source (constant intensity)
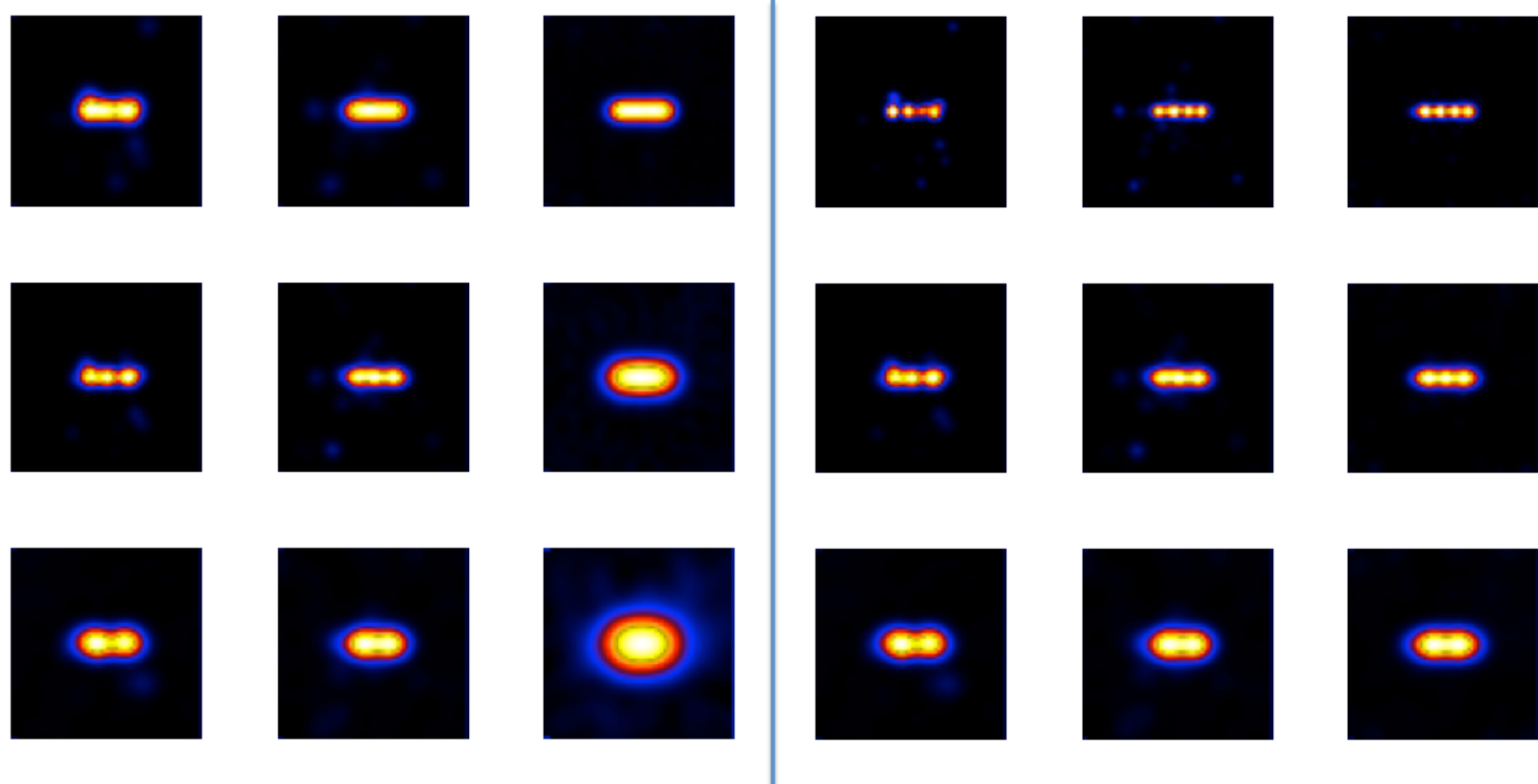
CLEAN DEFAULT
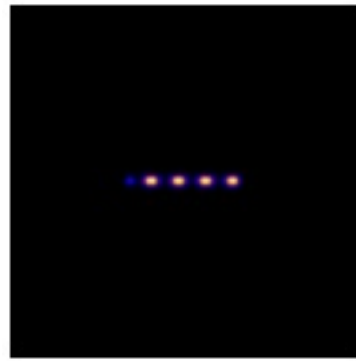
CLEAN ENHANCED

Case B: Line source (varying intensity)

PIXON

VIS FWD
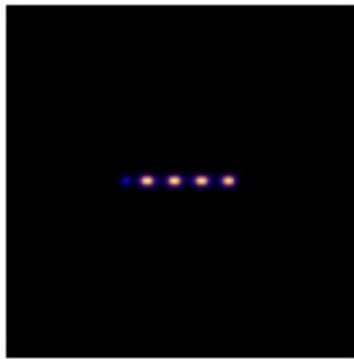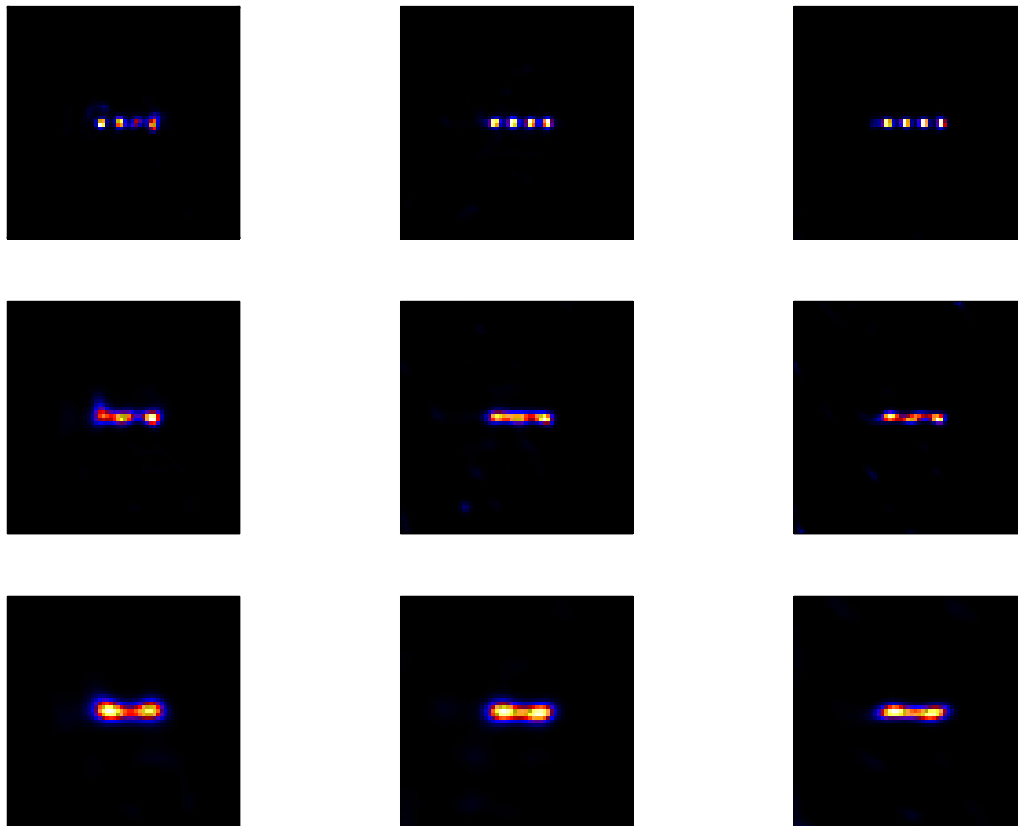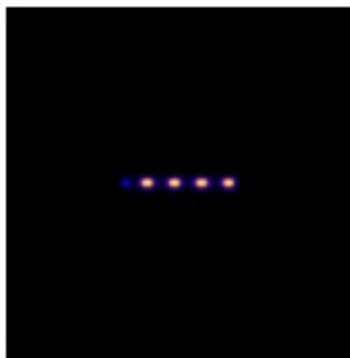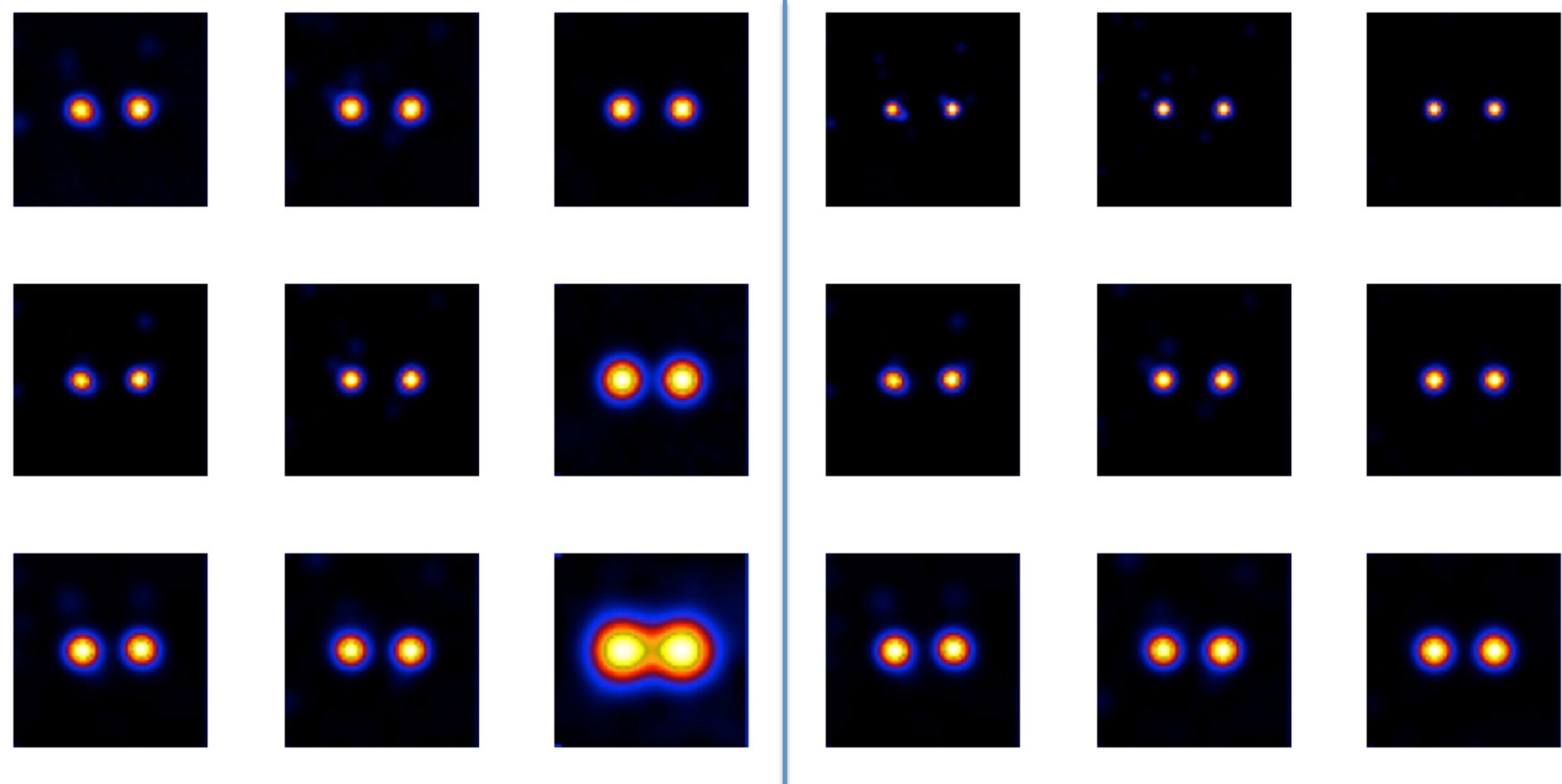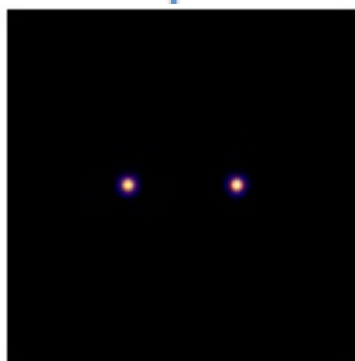
Case B: Line source (varying intensity)

MEM_NJIT

UV_SMOOTH

Case B: Line source (varying intensity)

EM

Case B: Line source (varying intensity)

CLEAN DEFAULT

CLEAN ENHANCED

Case C: Dynamic range (Flux ratio=1)
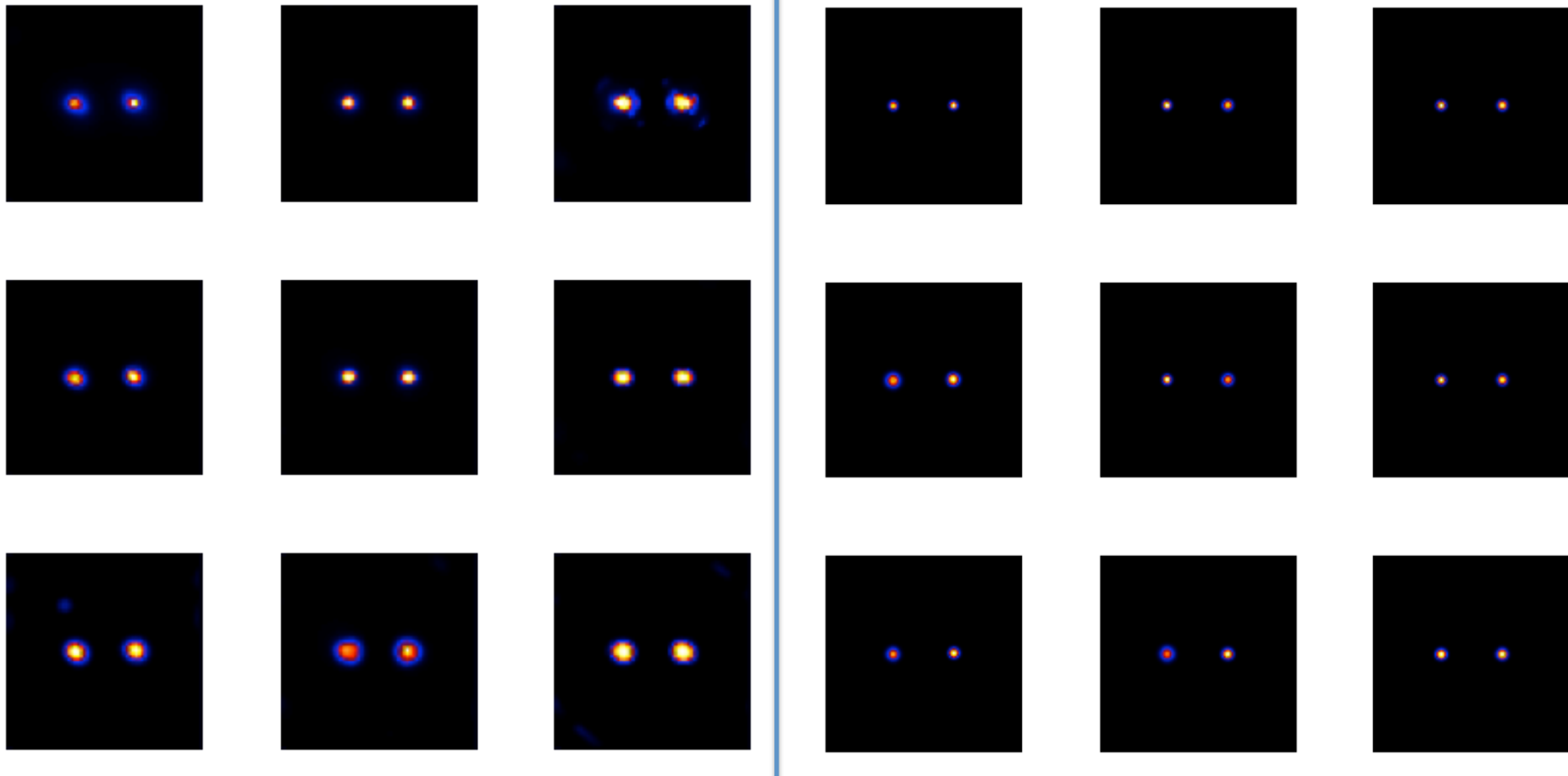
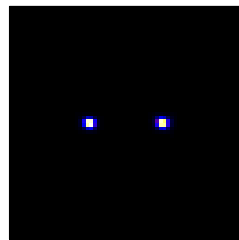**PIXON**
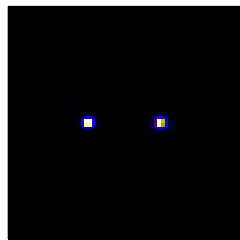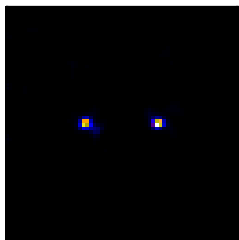
VIS FWD
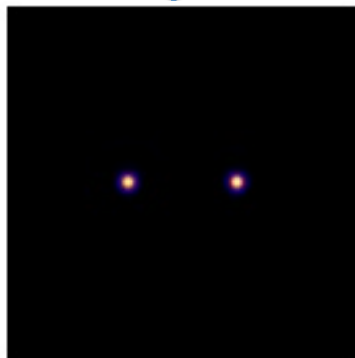
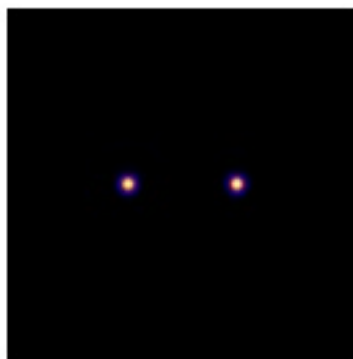**Case C: Dynamic range (Flux ratio = 1)**
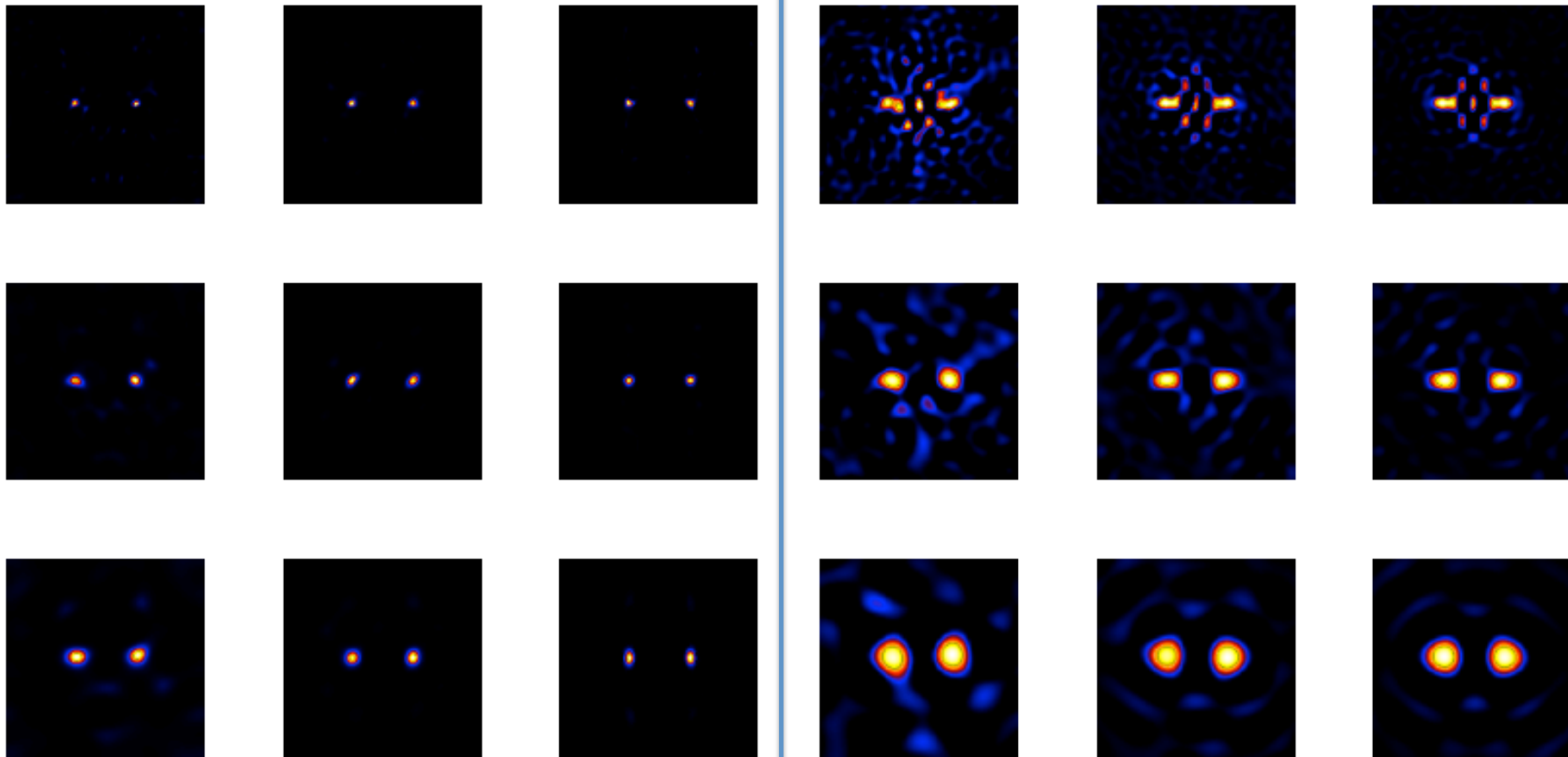
MEM_NJIT

UV_SMOOTH
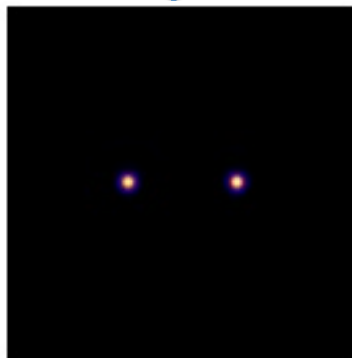
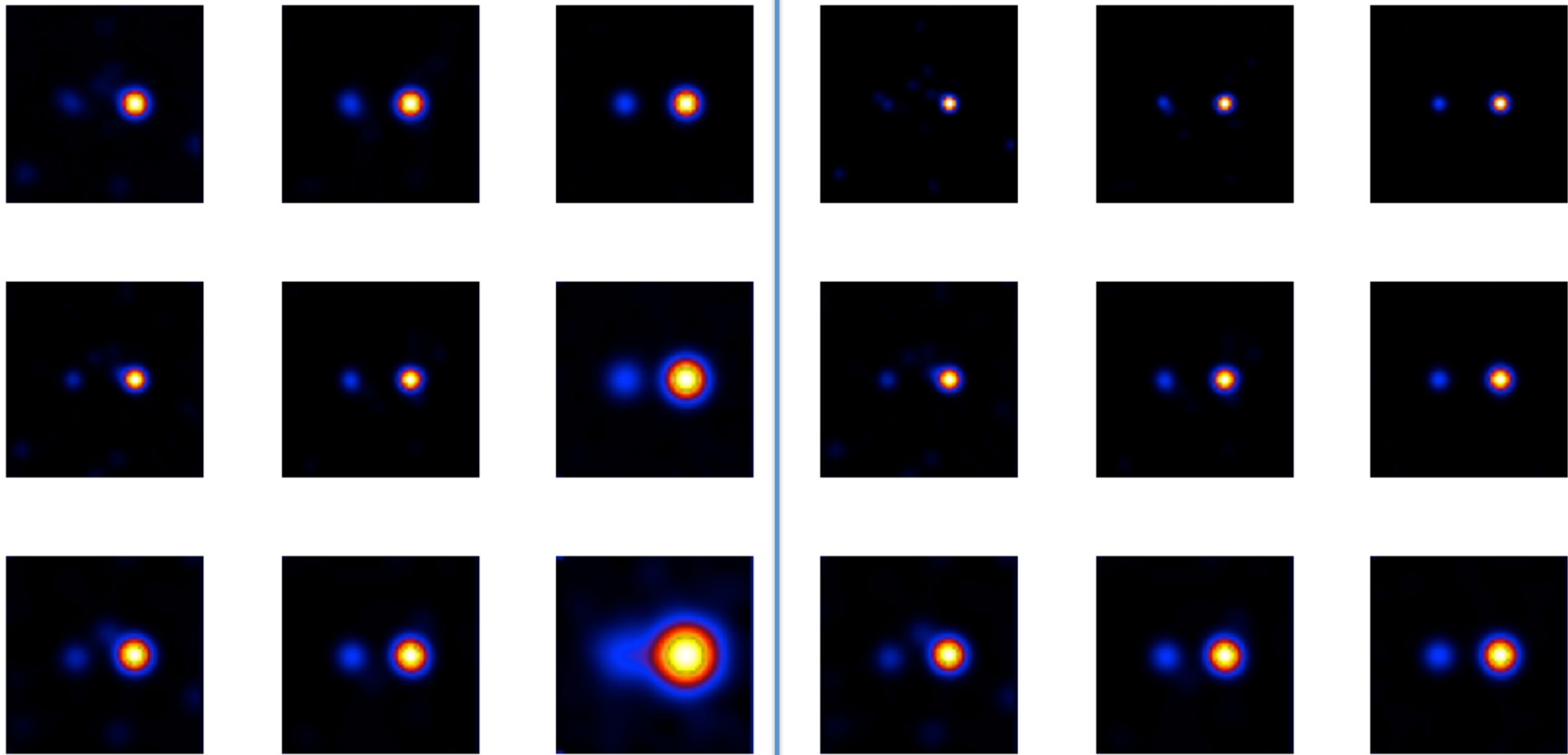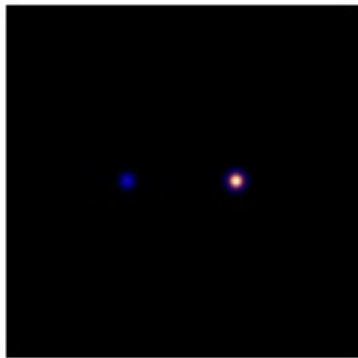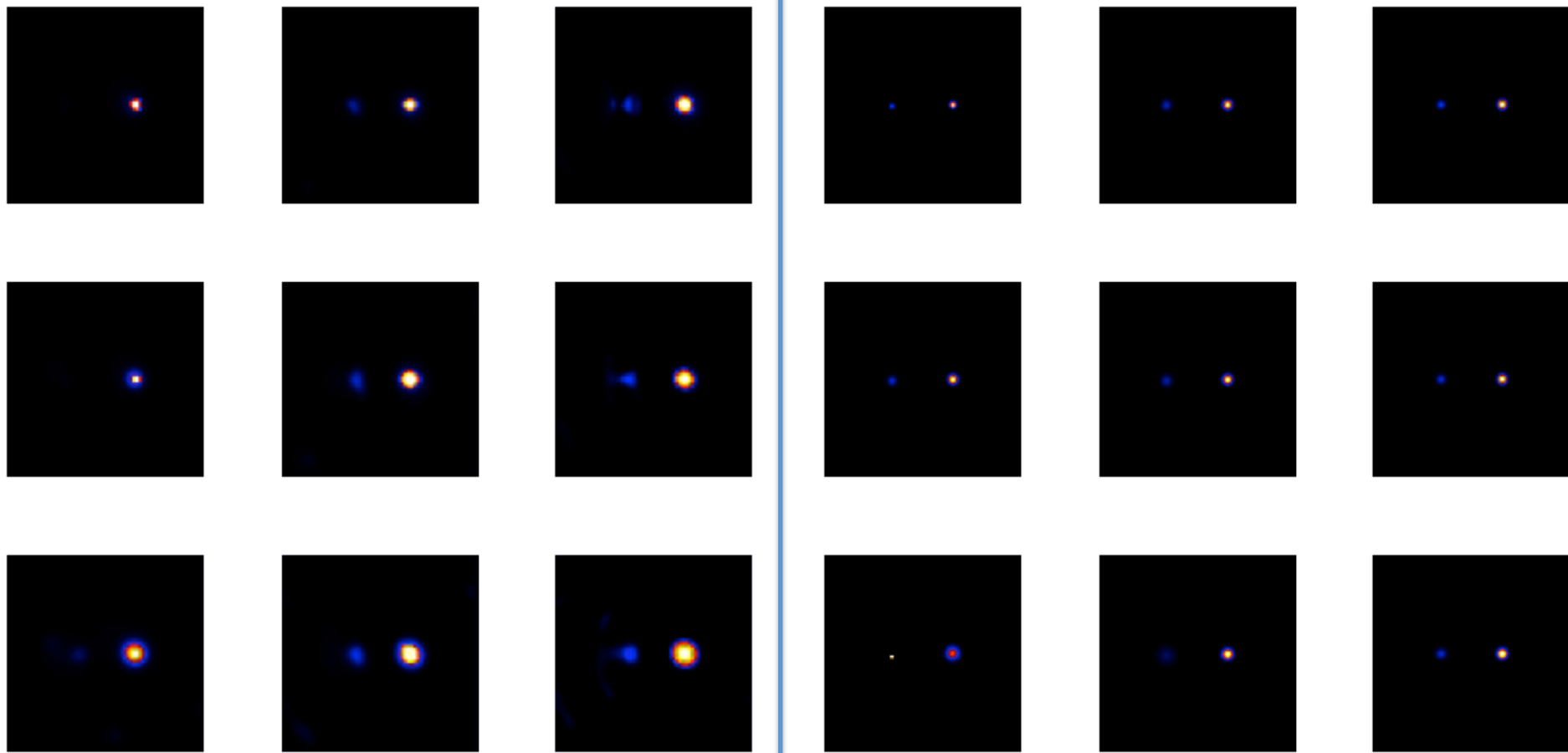**Case C: Dynamic range (Flux ratio = 1)**
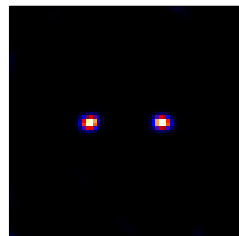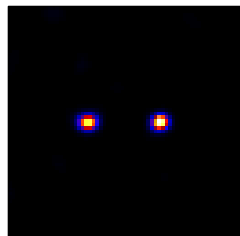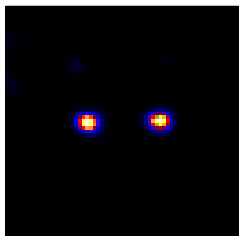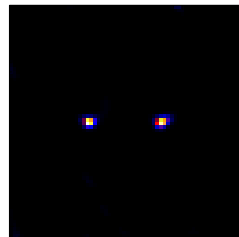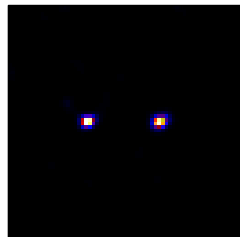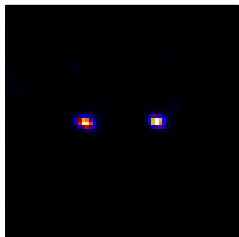
EM

Case C: Dynamic range (Flux ratio = 1)
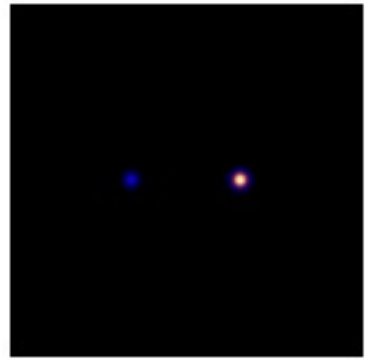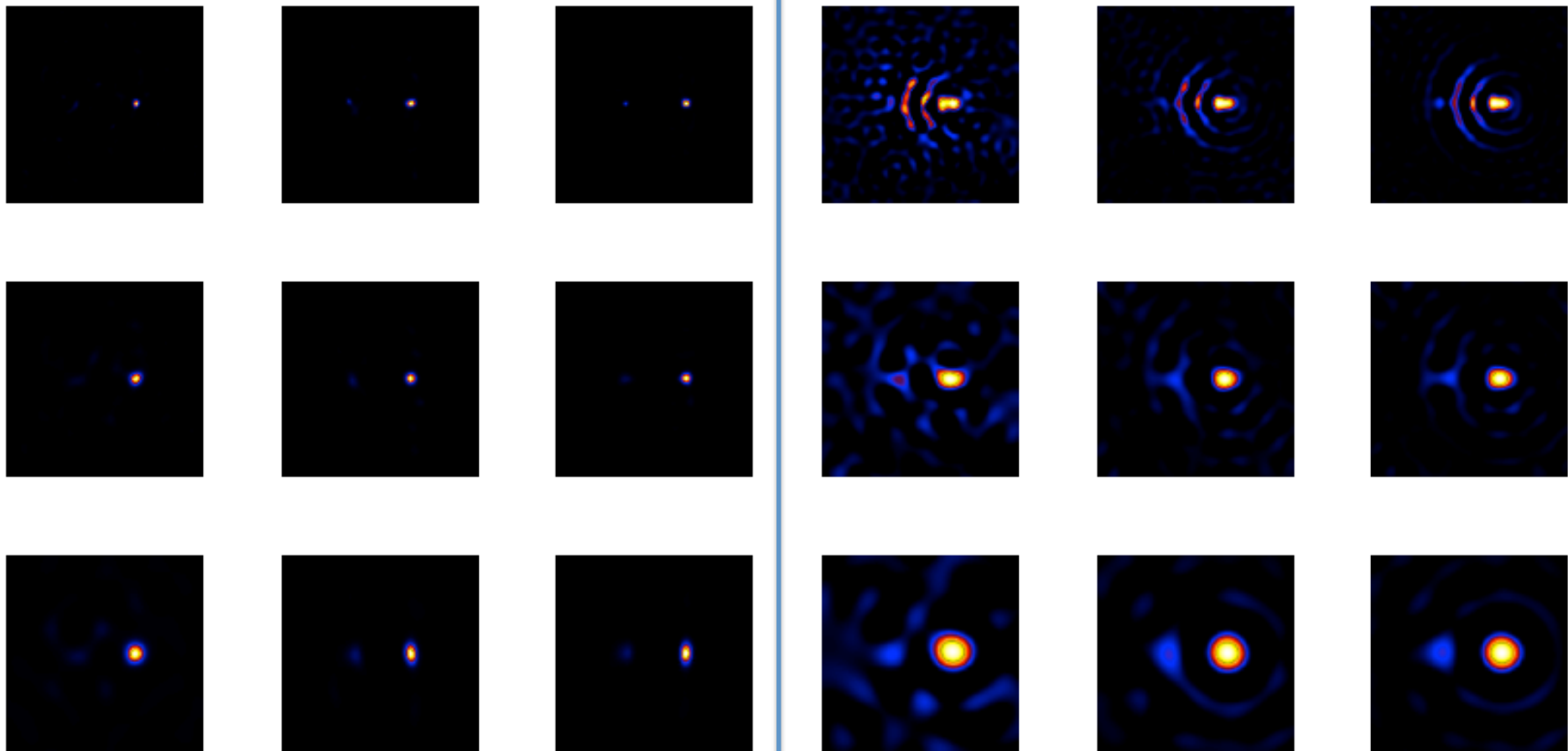
CLEAN DEFAULT   **CLEAN ENHANCED**
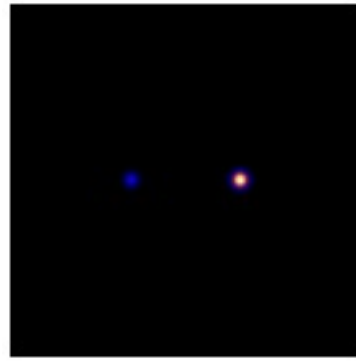
Case D: Dynamic range (Flux ratio = 5)

PIXON

VIS FWD

Case D: Dynamic range (Flux ratio = 5)

MEM_NJIT

UV_SMOOTH

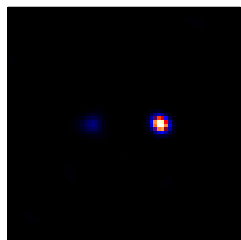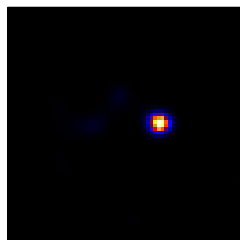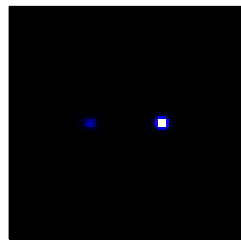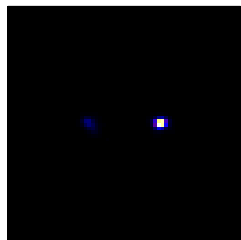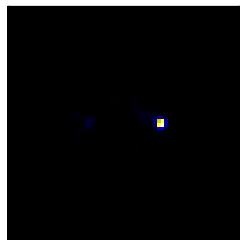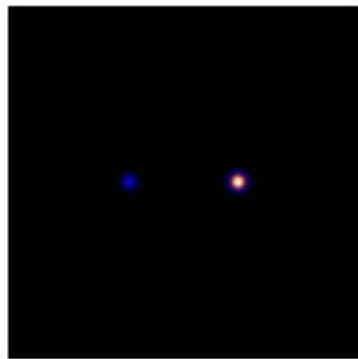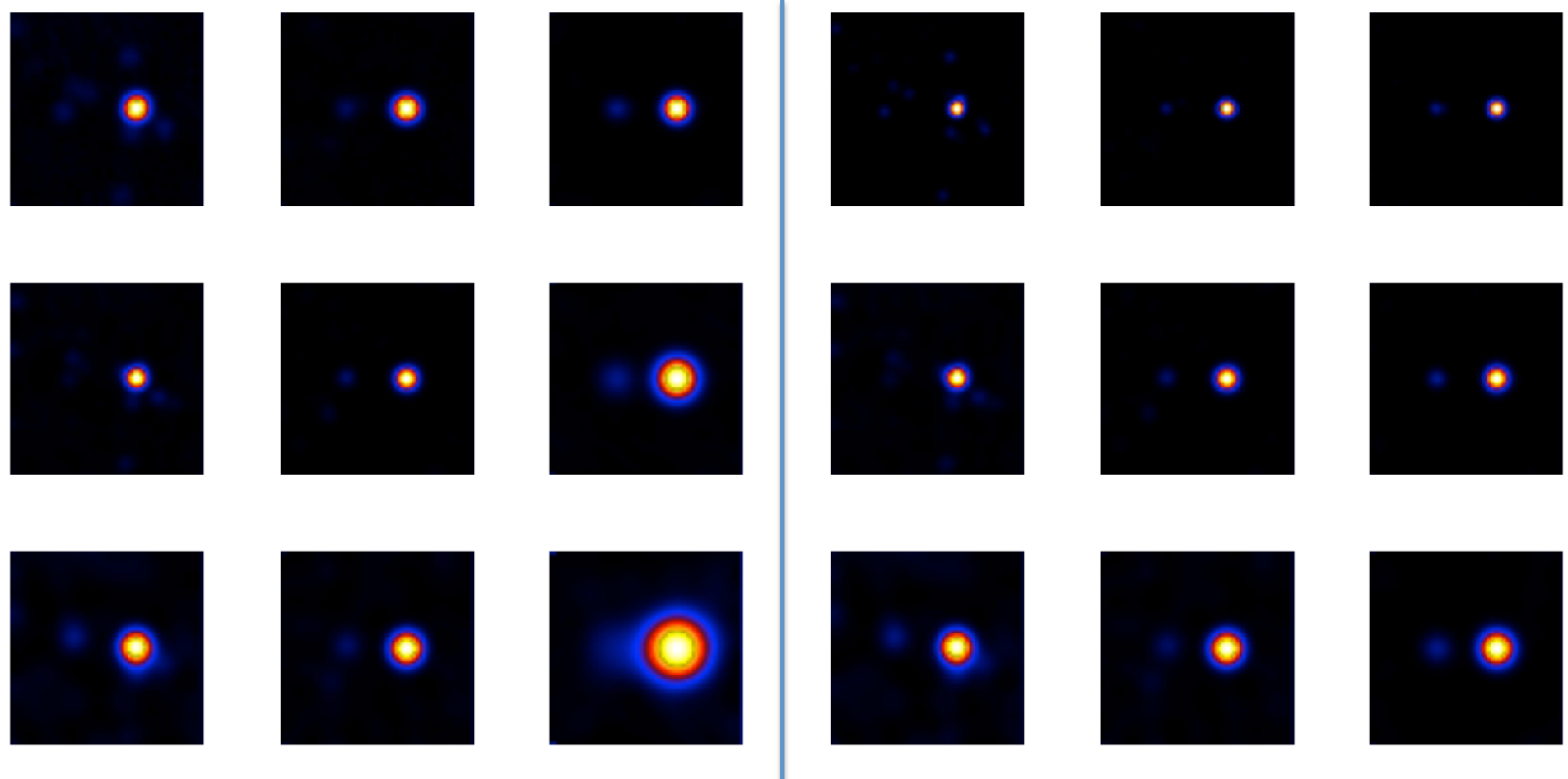**Case D: Dynamic range (Flux ratio = 5)**
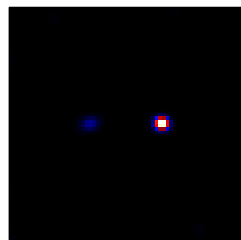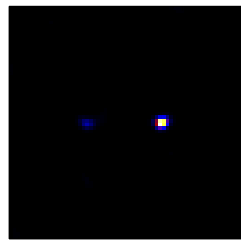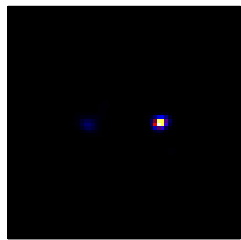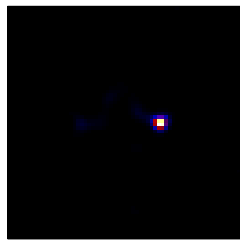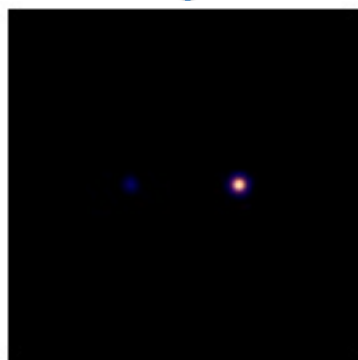
EM

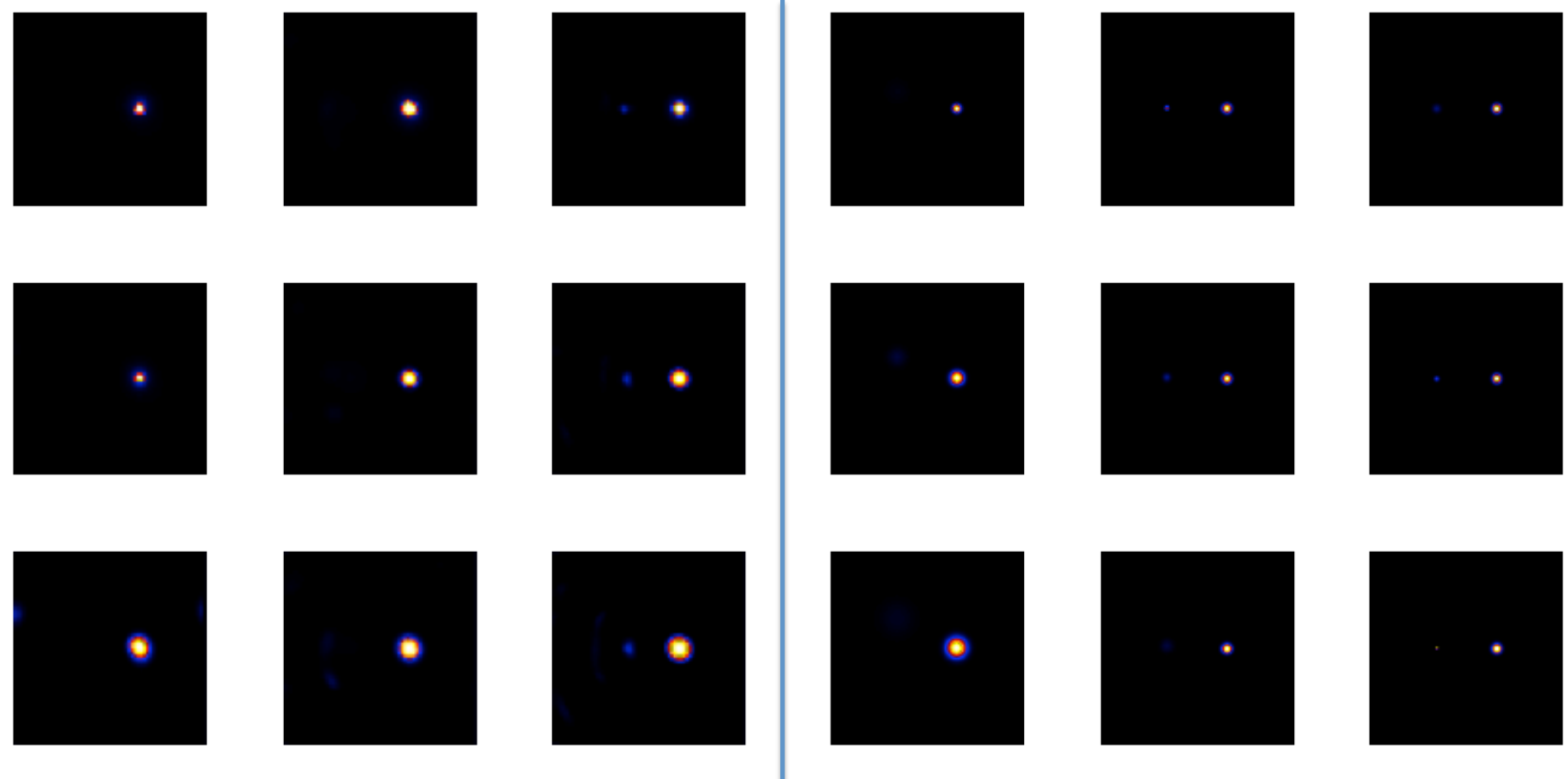**Case D: Dynamic range (Flux ratio = 5)**

CLEAN DEFAULT

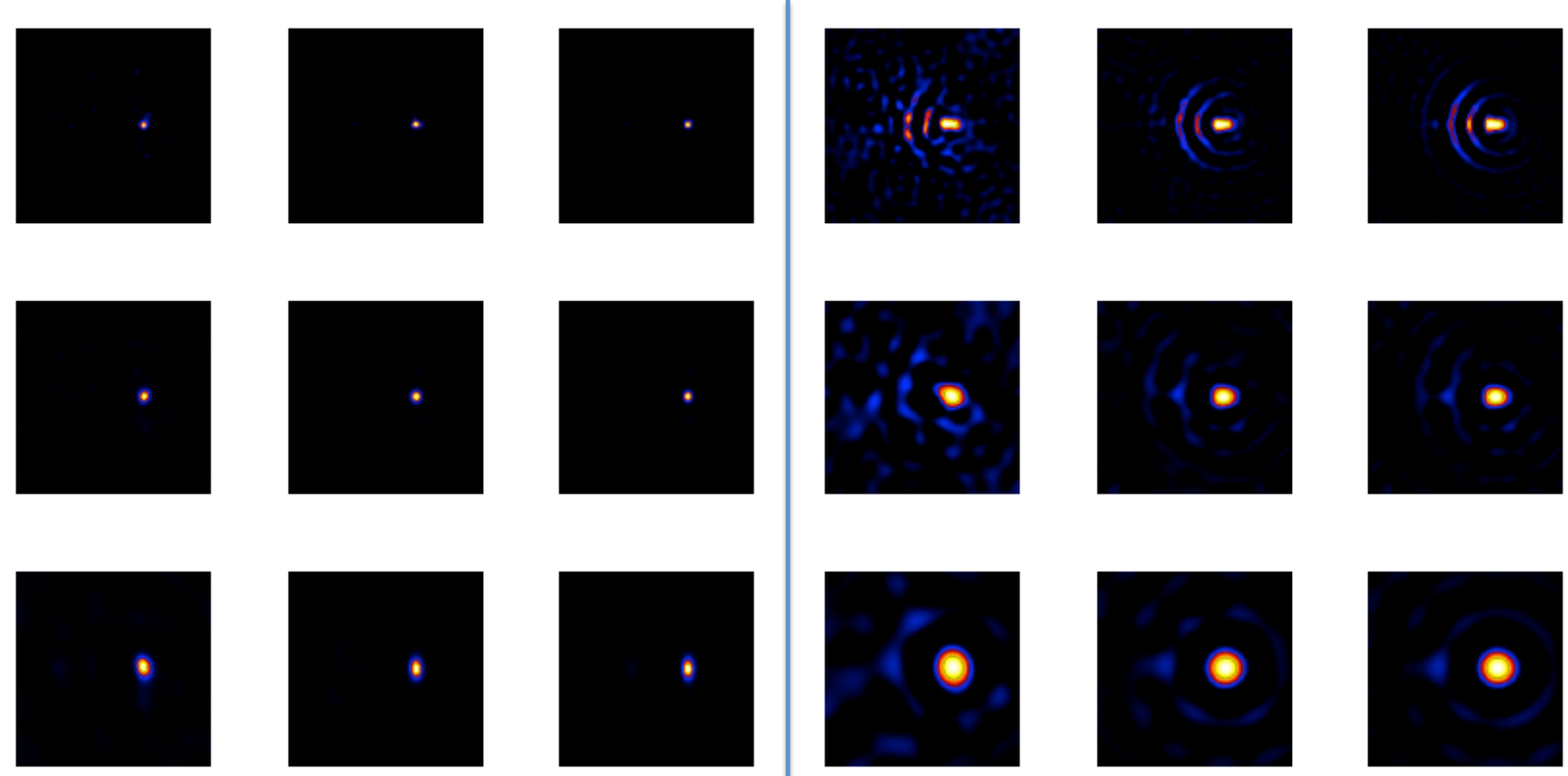**CLEAN ENHANCED**

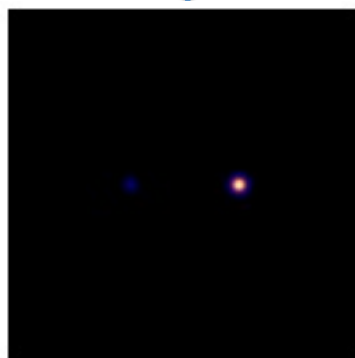**Case E: Dynamic range (Flux ratio = 10)**

PIXON

VIS FWD

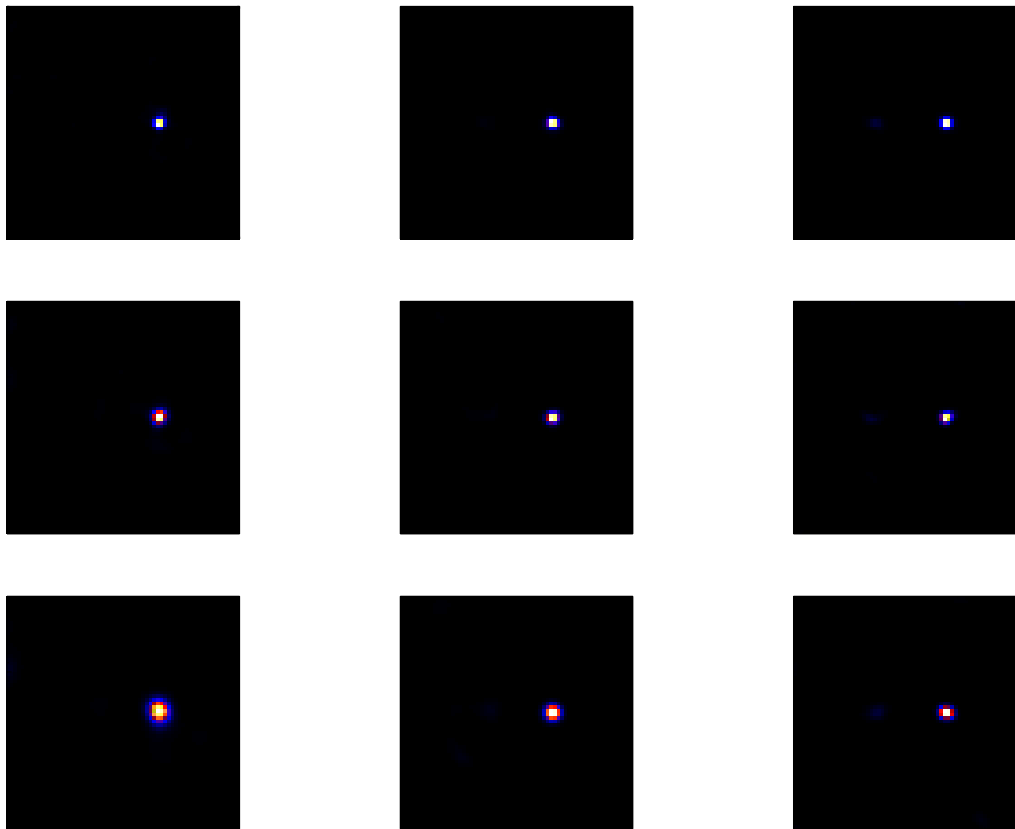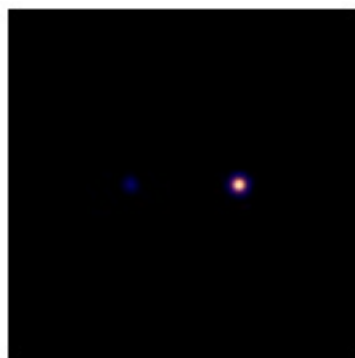**Case E: Dynamic range (Flux ratio = 10)**

MEM_NJIT

UV_SMOOTH

Case E: Dynamic range (Flux ratio = 10)

EM

Case E: Dynamic range (Flux ratio = 10)