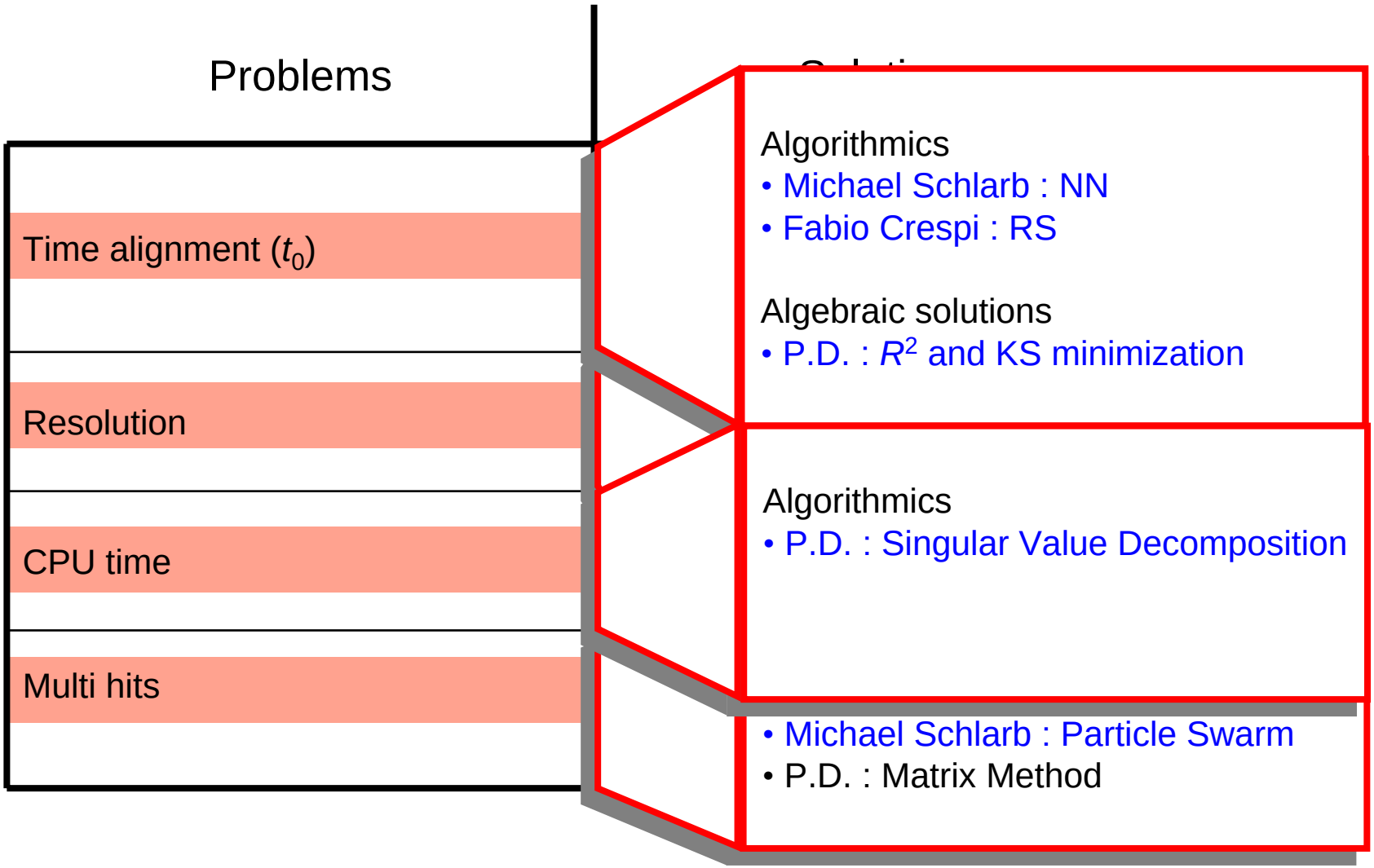
PSA status


Problems
Time alignment (t_0)
Resolution
CPU time
Multi hits
Algorithmics
• Michael Schlarb : NN
• Fabio Crespi : RS
Algebraic solutions
• P.D. : R^2 and KS minimization
Algorithmics
• P.D. : Singular Value Decomposition
• Michael Schlarb : Particle Swarm
• P.D. : Matrix Method

SVD

Published in
P.D. *et al*. behalf AGATA, EPJA 40 (2009)

• method

SVD :

• reduces the size of the signals

• keeping the max. information

• improving the conditioning

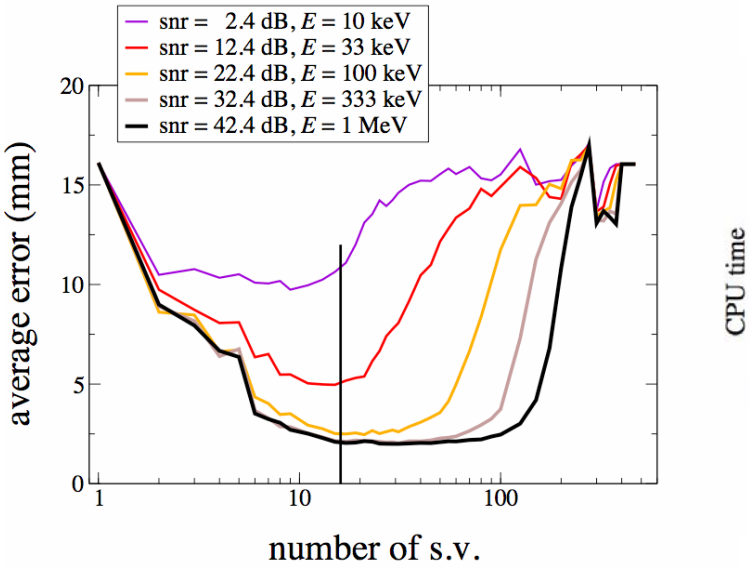
• out-of line calculations

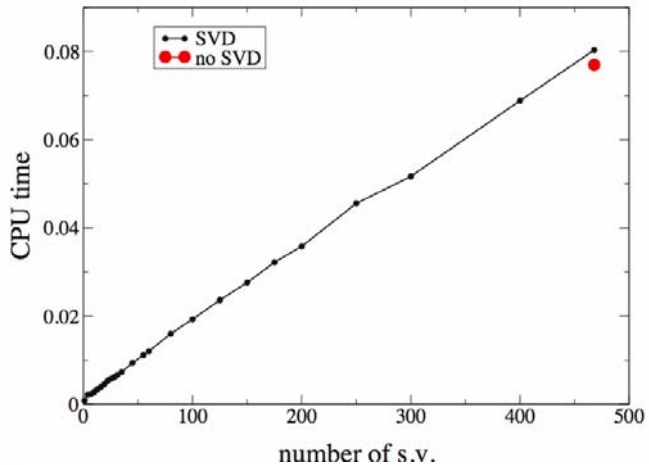
⇒ reduces the CPU time

⇒ no resolution loss

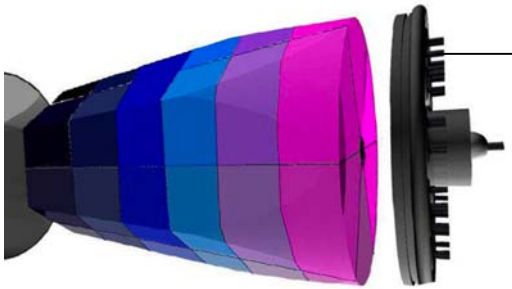
⇒ improve resol. and decomposition power

• results





t_0 correction



Pre-proc.

CFD

PSA

a priori :
NN, RS

GS
Swarm

Matrix

KS or R^2
minim.

NLLC

signal
basis

Shifted
bases

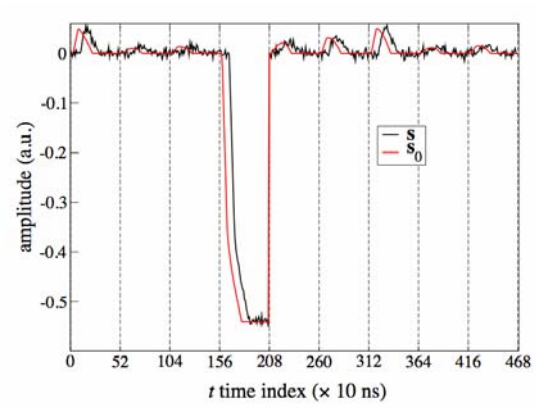
χ^2

tracking

χ^2 method

Published in
P.D. *et al*. behalf AGATA, NIMB 269 (2009) 542
P.D. *et al*. behalf AGATA, JPG 36 (2009) 037001

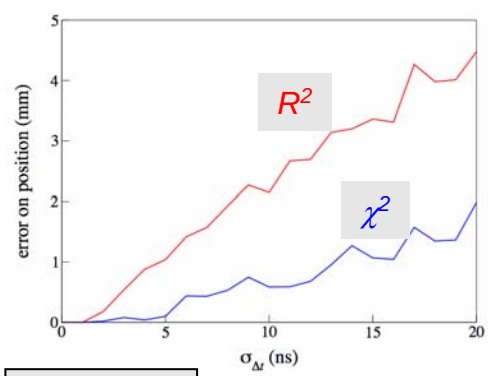
- method



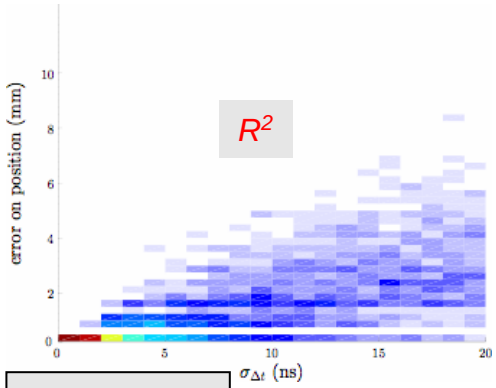
$$R^2 = \sum_i (s_i - s_i^{ref})^2$$

$$\chi^2 = \sum_i \frac{(s_i - s_i^{ref})^2}{\sigma_i^2} \quad \text{with} \quad \sigma_i^2 = \sigma^2_{noise} + ds_i^{ref\,2} \frac{\sigma_{\Delta t}^2}{dt}$$

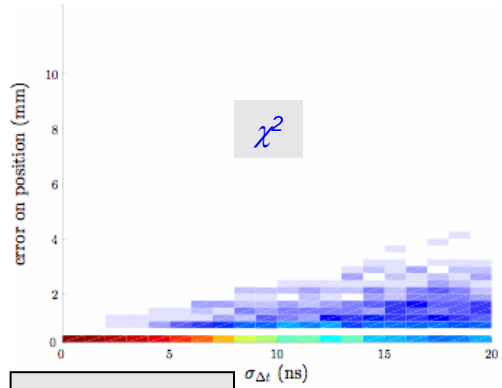
- results



a given (xyz)



the whole basis



the whole basis

R^2 minim.

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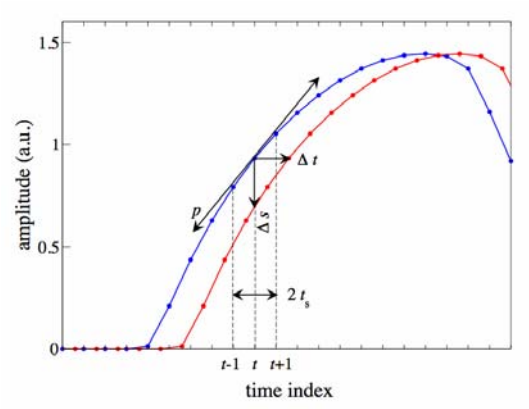
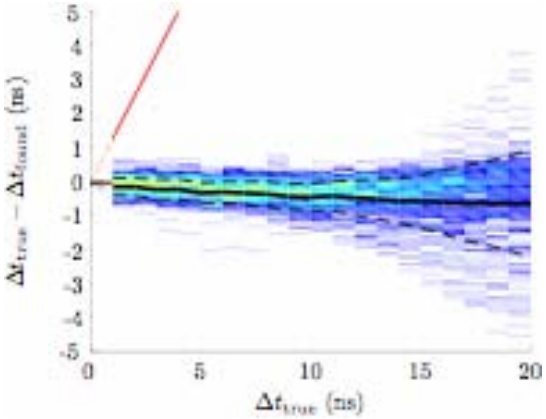
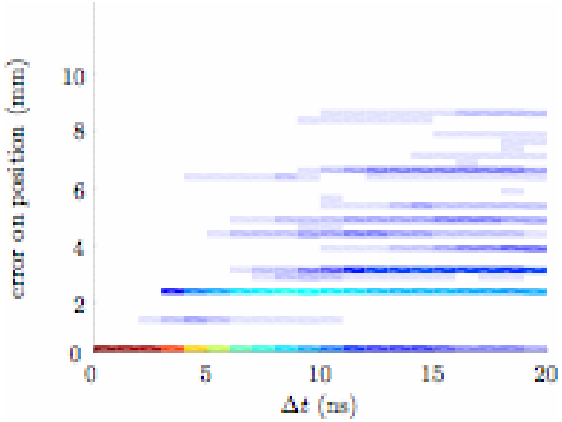
P.D. *et al*. behalf AGATA, NIMB 269 (2009) 542

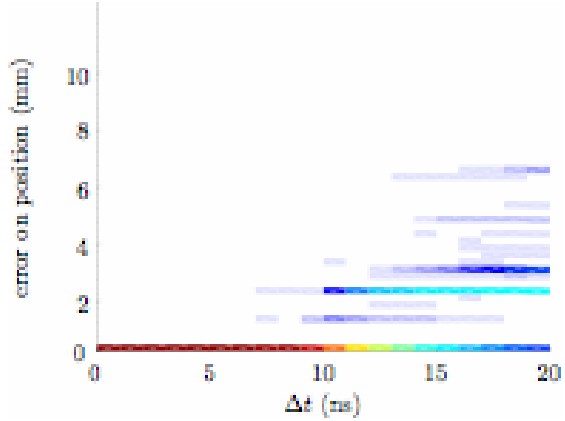
- method



- results







KS minim.

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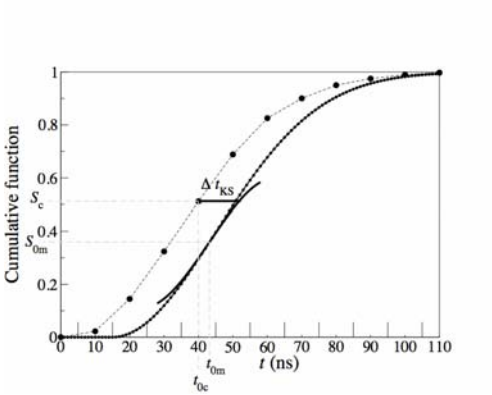
- method

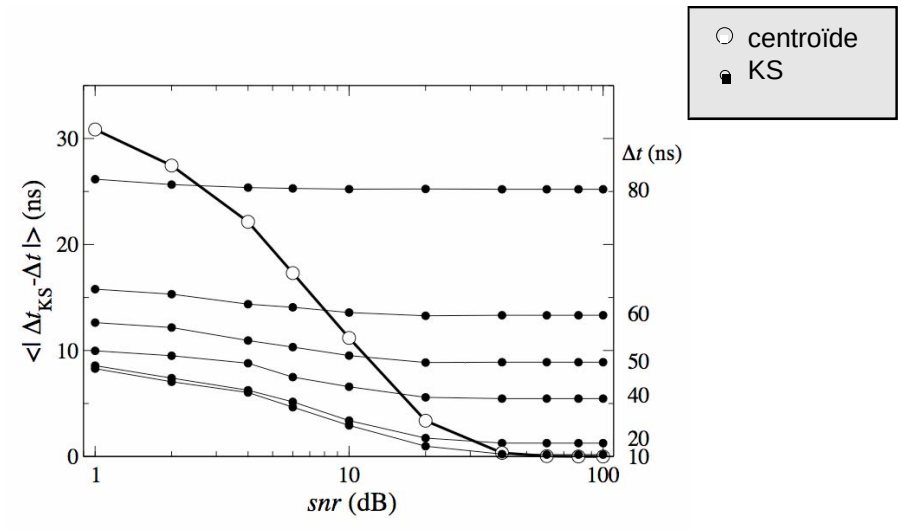


$$S(t) = \sum_{t'=1}^{t} s(t') \,/\, \sum_{t'} s(t')$$

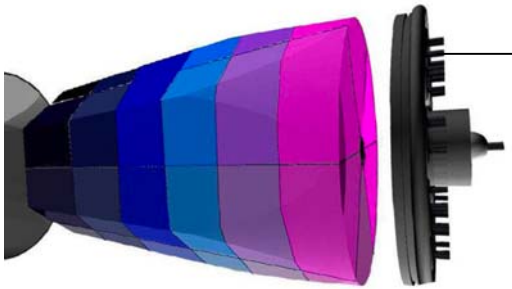
$$S_c = S_m + (t_{0c}+\Delta t_{KS}-t_{0m})\, s_{0m} + 1/6\, (t_{0c}+\Delta t_{KS}-t_{0m})^3\, r_{0m}$$

$$\Rightarrow \quad \Delta t_{KS} \qquad \frac{\partial\, \Delta t_{KS}}{\partial\, S_c} \sim \frac{1}{s_0}$$

- results



t_0 correction



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