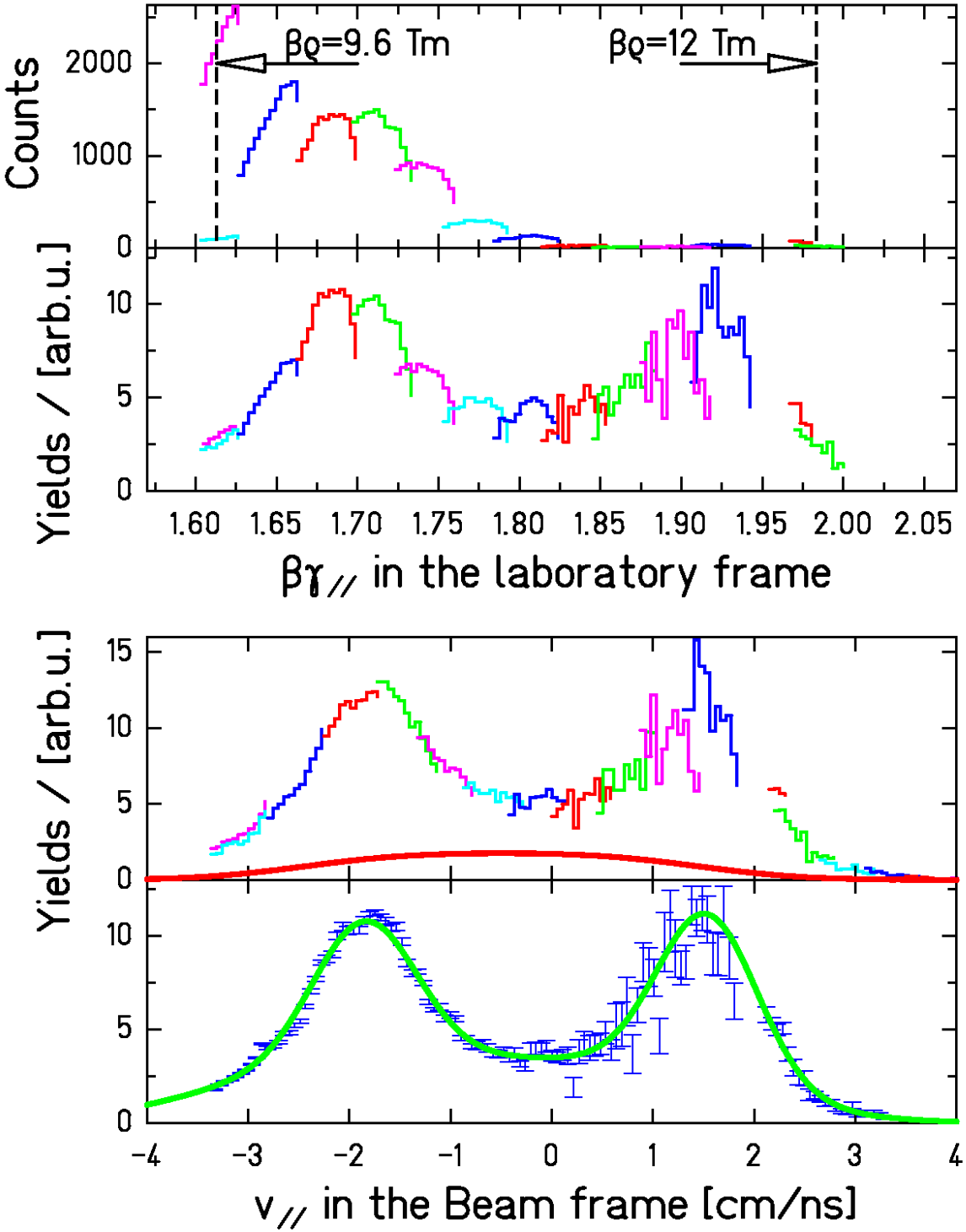
Signature of binary break-up in the production of light particles in spallation reactions

P. Napolitani [a ; b)]

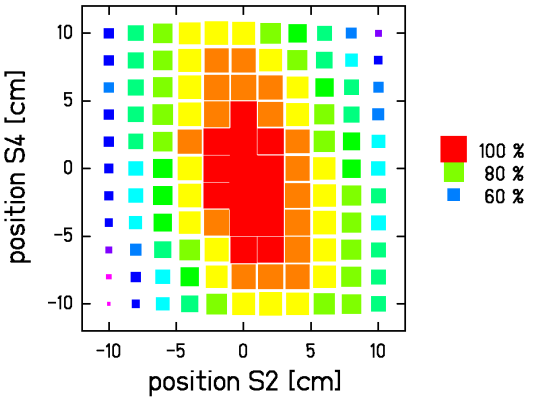
a) GSI - Germany

b) IPN Orsay - France

Measurement of the velocity of ^{6}Li emitted from ^{56}Fe+p at 1 A GeV

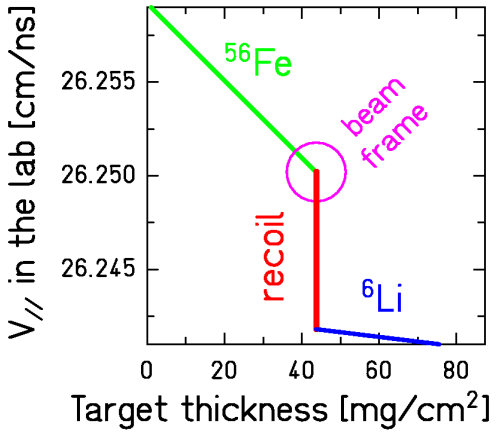


- Several settings ⇨ several βρ.
- Normalisation ⇨ yields.
- Transmission related to ion-optics.



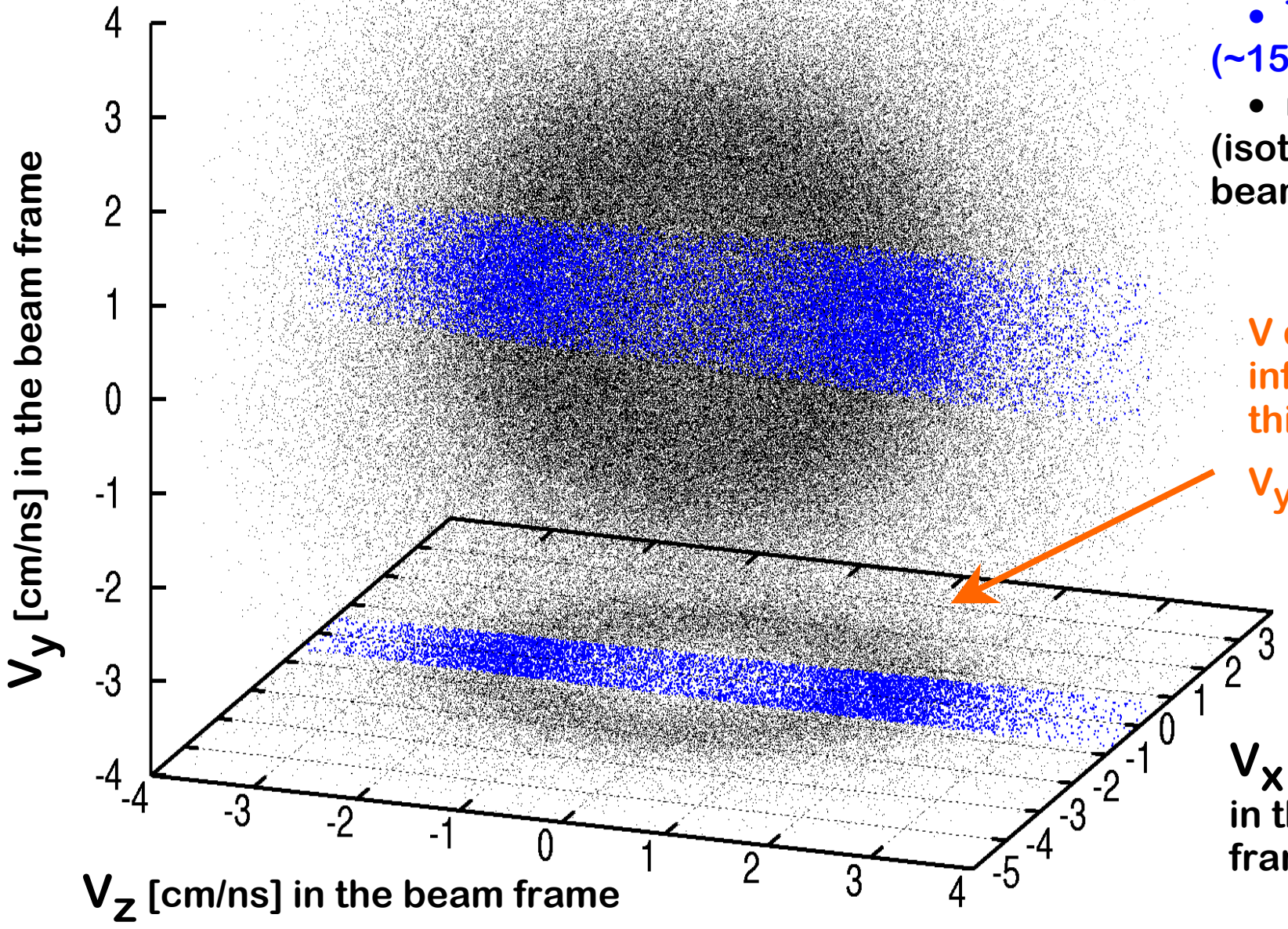
(J. Benlliure, J. Pereira-Conca, K.-H. Schmidt N.I.M. A 478 (2002) 493-505)

- Lab frame ⇨ beam frame.



- Ti "container" contribution.

Reconstruction of the velocity distribution of ^{6}Li emitted from ^{56}Fe+p at 1 A GeV

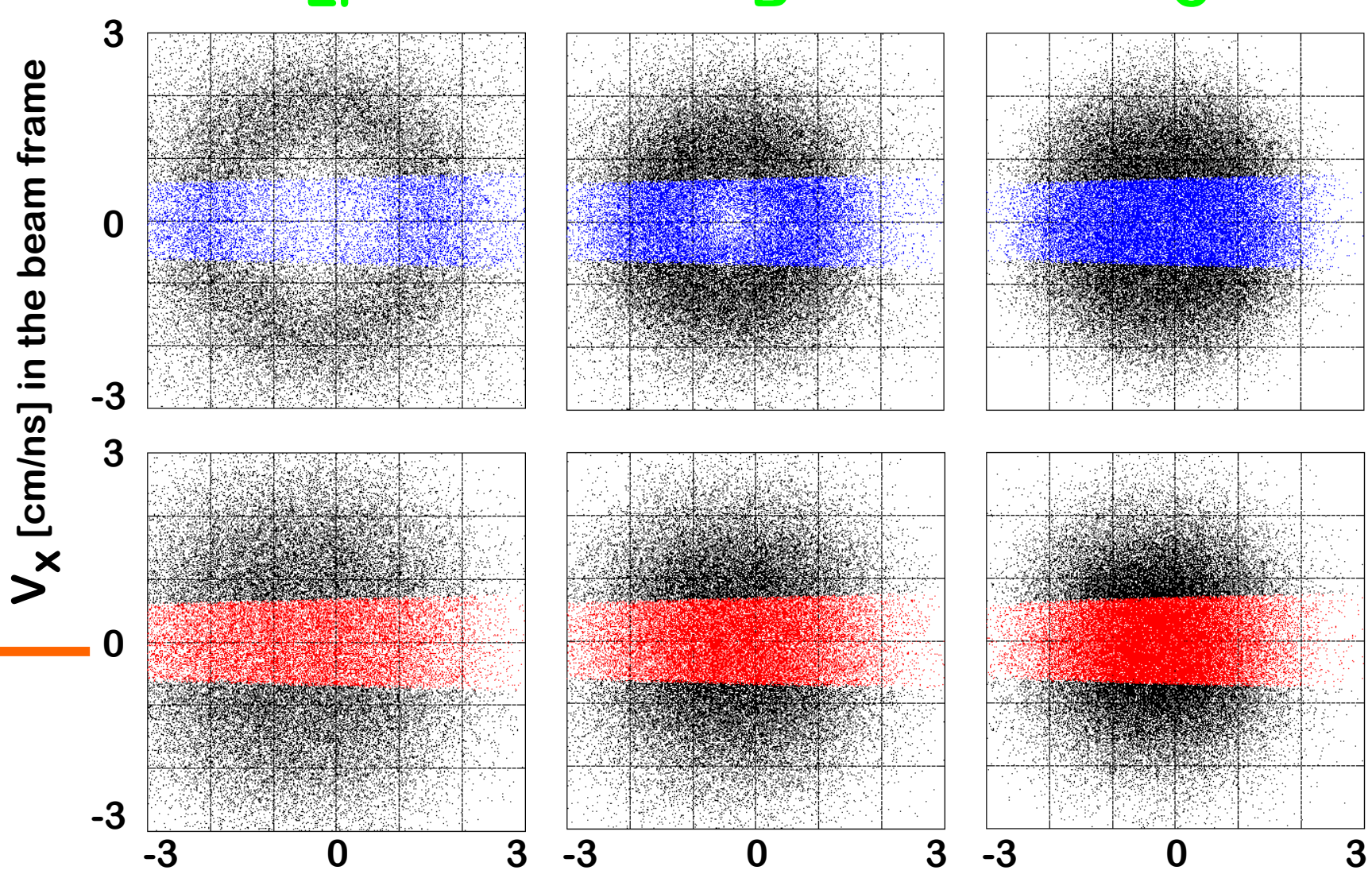


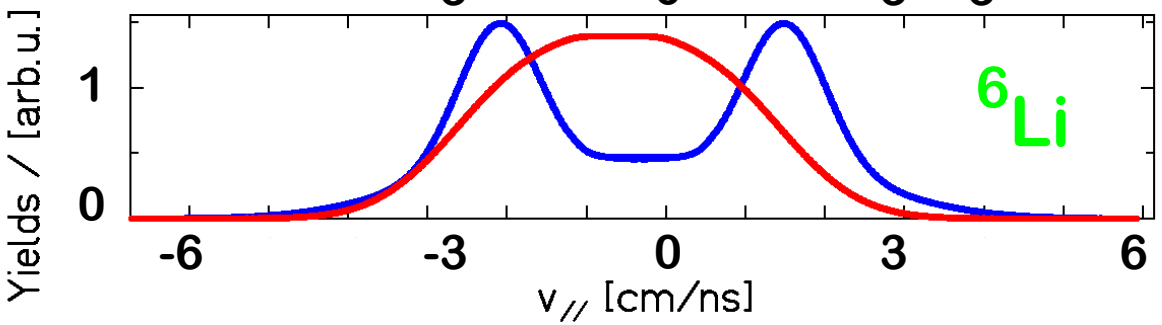
- Transmitted. (~15 mr in Lab frame)
- not transmitted. (isotropy respect to the beam frame assumed)

V distribution in an infinitesimally thin slab around the $V_y = 0$ plane.

^{56}Fe+p
1 A GeV: strong Coulomb component.

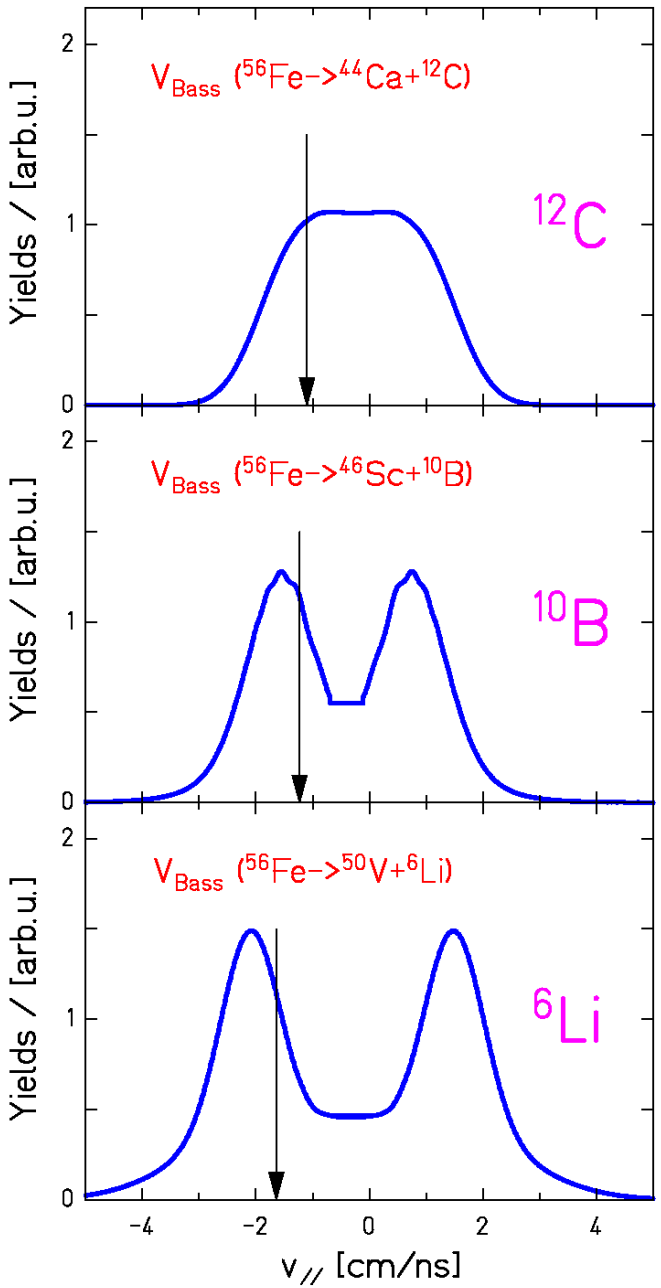
^{56}Fe+Ti
1 A GeV : fragmen-tation.



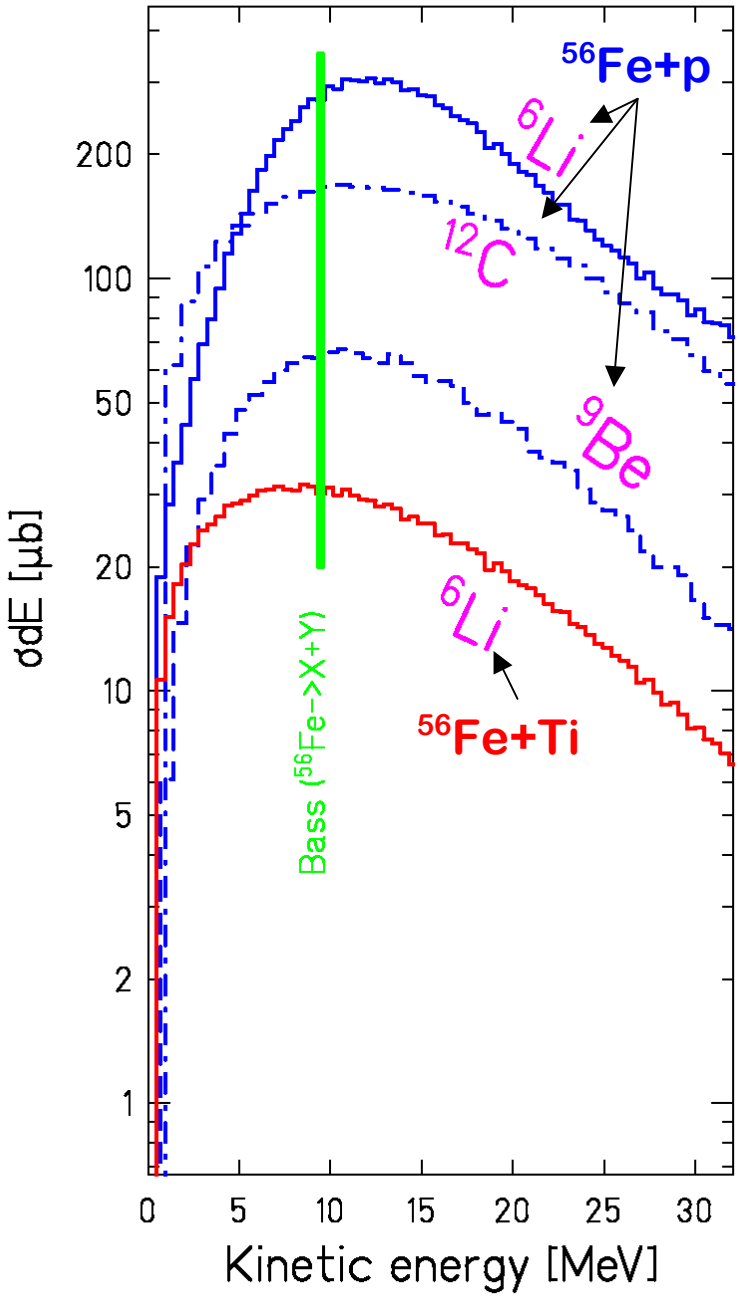


V distribution in an infinitesimally thin gap around the $V_x = 0$ line.

^{56}Fe+p 1 A GeV

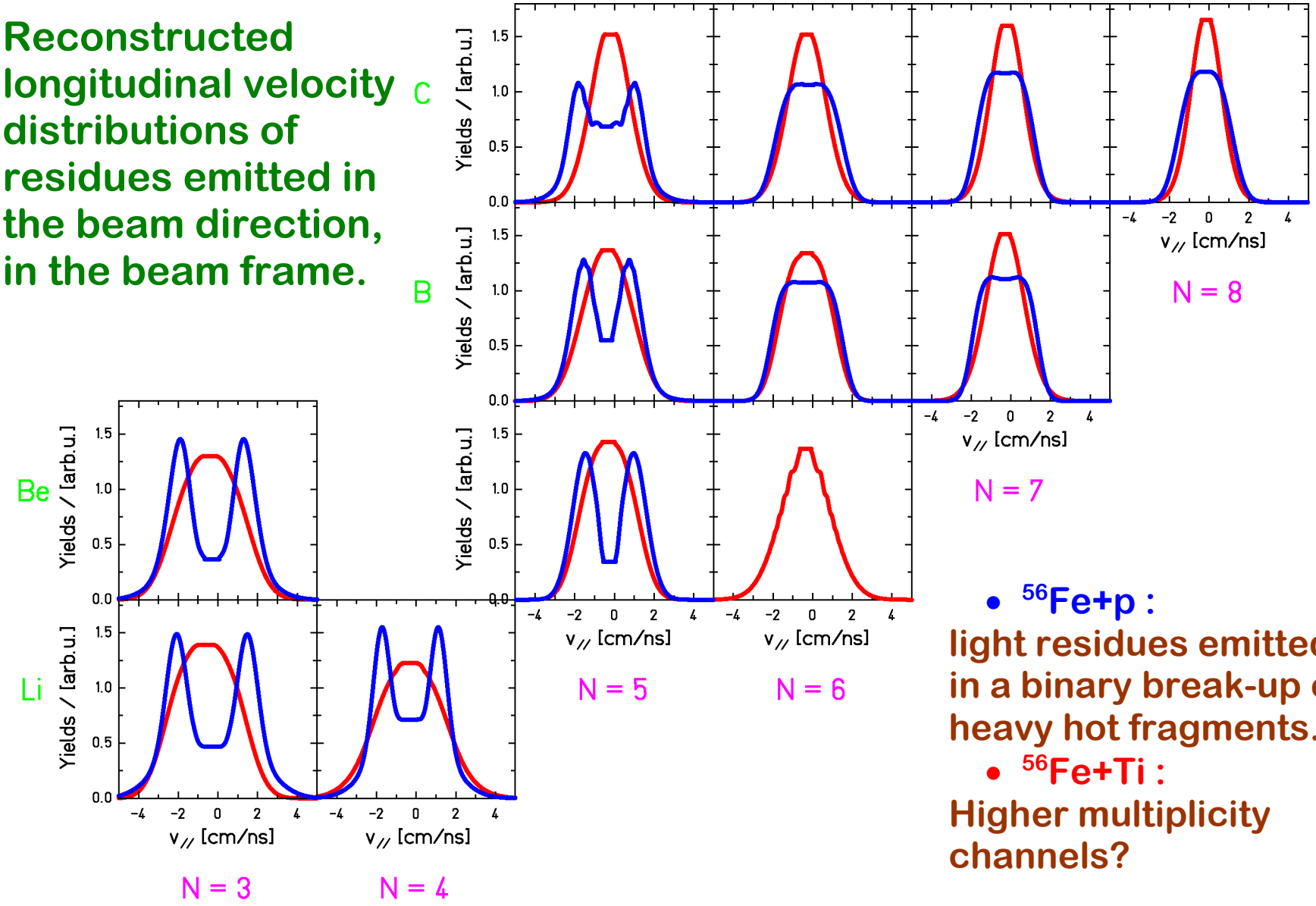


^{56}Fe+p 1 A GeV: Light residues are emitted from a heavy source.



Results

Reconstructed longitudinal velocity distributions of residues emitted in the beam direction, in the beam frame.



- ^{56}Fe+p : light residues emitted in a binary break-up of heavy hot fragments.
- ^{56}Fe+Ti : Higher multiplicity channels?

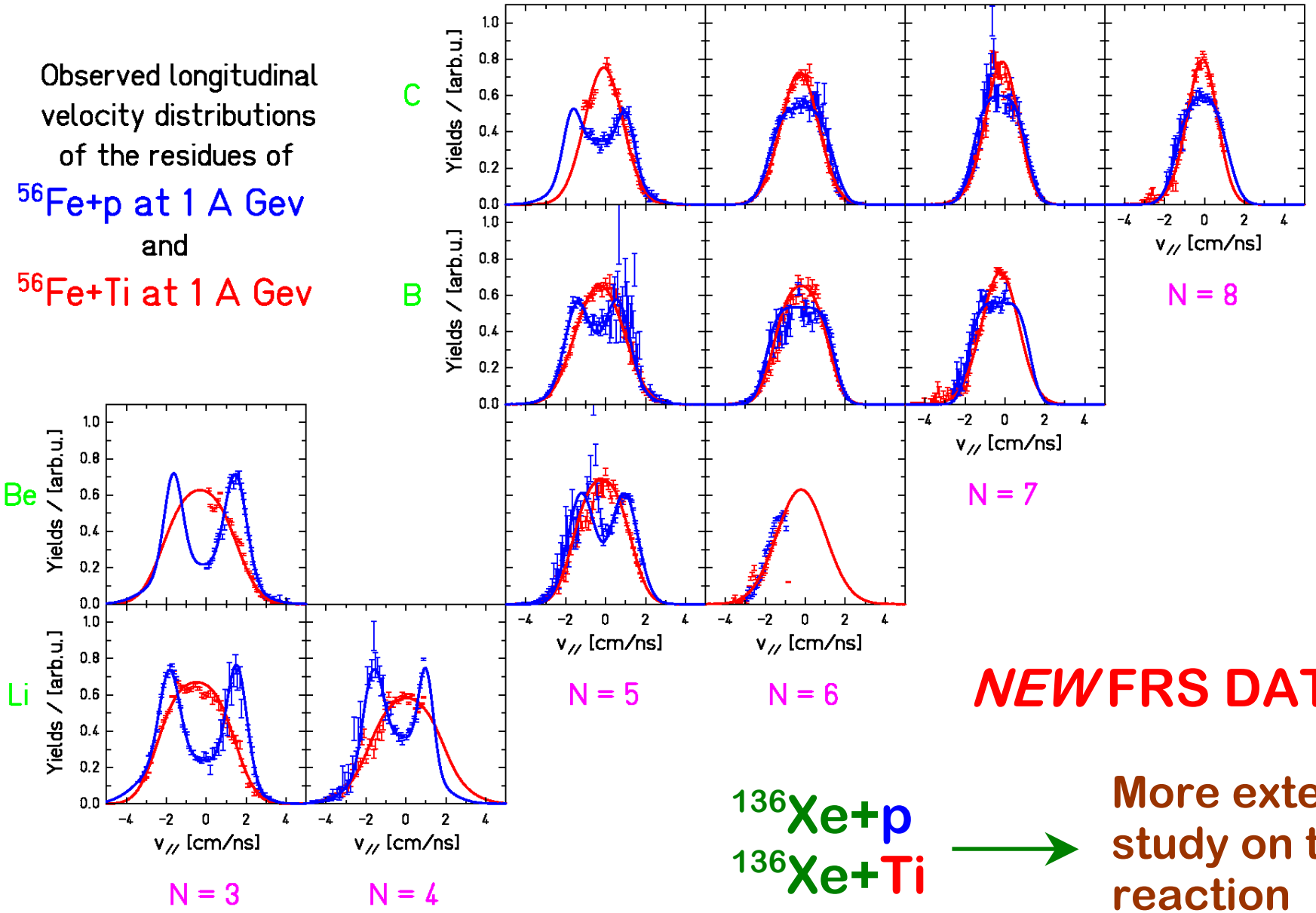
Perspectives

Observed longitudinal velocity distributions of the residues of

^{56}Fe+p at 1 A Gev

and

^{56}Fe+Ti at 1 A Gev



^{136}Xe+p

^{136}Xe+Ti → **More extended study on the reaction mechanism !**

***NEW* FRS DATA!**