

FRS users' meeting
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**Experimental Indications for the
Response of the Spectators
to the Participant Blast**

**M. V. Ricciardi^a, T. Enqvist^{a,1}, J. Pereira^b, J. Benlliure^b,
M. Bernas^c, E. Casarejos^b, V. Henzl^a, A. Kelić^a,
J. Taieb^{c,2}, K.-H. Schmidt^a**

^a*GSI, Darmstadt, Germany*

^b*University of Santiago de Compostela, Spain*

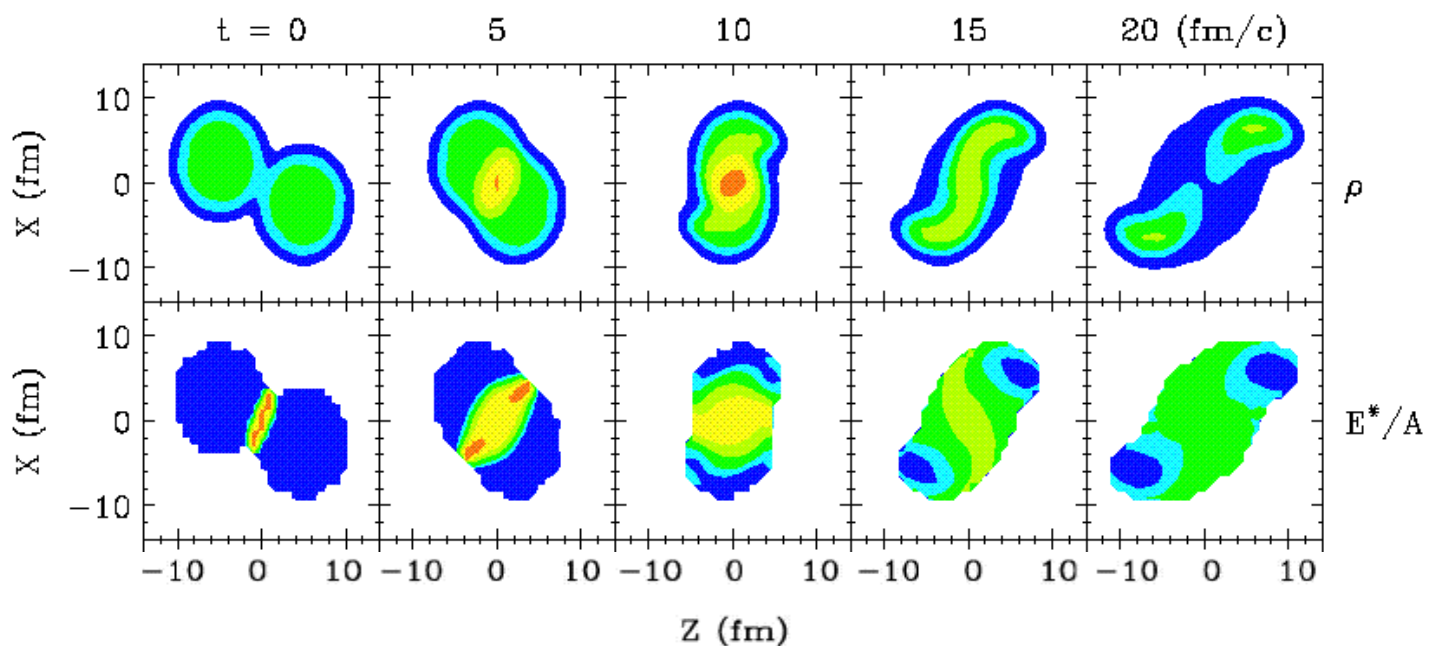
^c*Institut de Physique Nucléaire, Orsay, France*

¹ Present address: University of Jyväskylä, 40351 Jyväskylä, Finland

² Present address: CEA/Saclay DM2S/SERMA/LENR, 91191 Gif/Yvette CEDEX, France

INTRODUCTION

Mid-peripheral relativistic heavy-ion collisions to investigate the EOS of nuclear matter



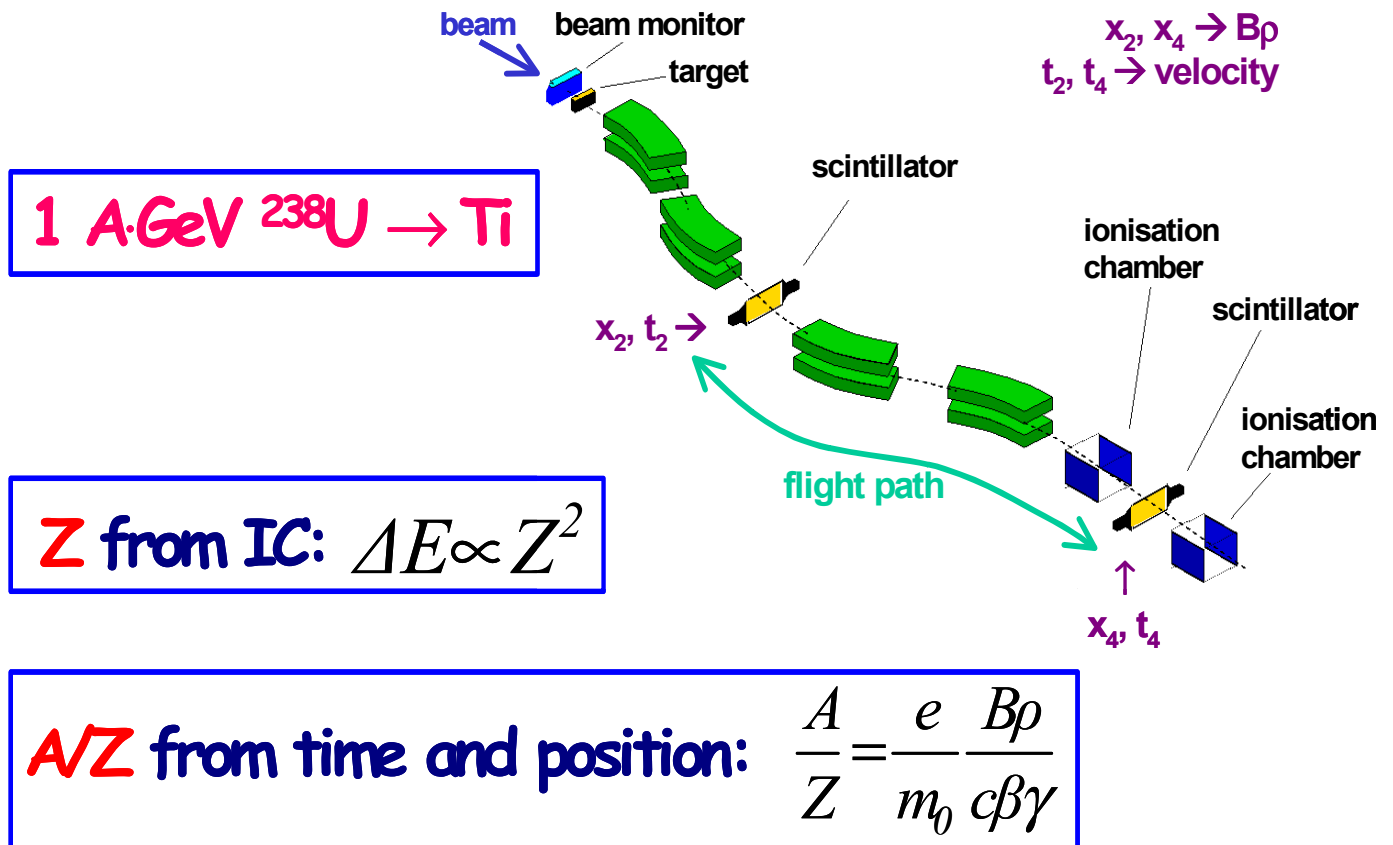
$^{124}\text{Sn} + ^{124}\text{Sn}$ $T_{\text{lab}} = 800 \text{ MeV/u}$ $b = 5 \text{ fm}$
BUU calculations

L. Shi, P. Danielewicz, R. Lacey, PRC 64 (2001)

OUTLINE

- 1 Experiments: $^{238}\text{U} \rightarrow \text{Pb}$ at 1 A·GeV at FRS
 $^{238}\text{U} \rightarrow \text{Ti}$ at 1 A·GeV at FRS
- 2 The measured velocity spectra
- 3 Comparison of the experimental data with the Morrissey systematics
- 4 Conclusions

THE EXPERIMENT AT THE FRS AT GSI

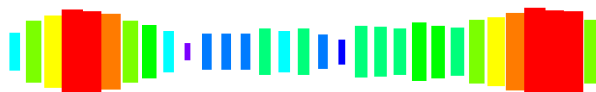
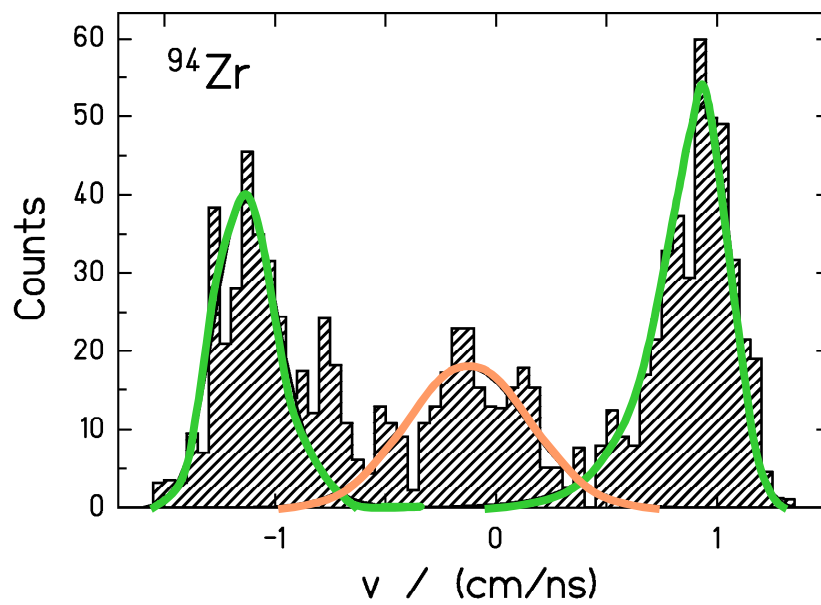
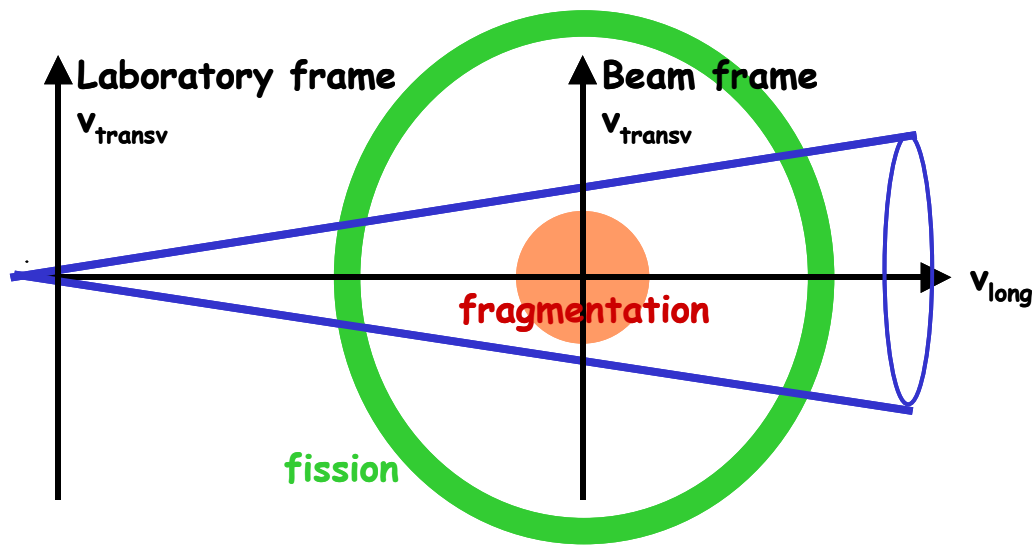


Once mass and charge are identified (A , Z are integer numbers) the **velocity** is calculated from $B\rho$:

$$\beta\gamma = \frac{e}{c \cdot m_0} \cdot \frac{A}{Z} \cdot B\rho$$

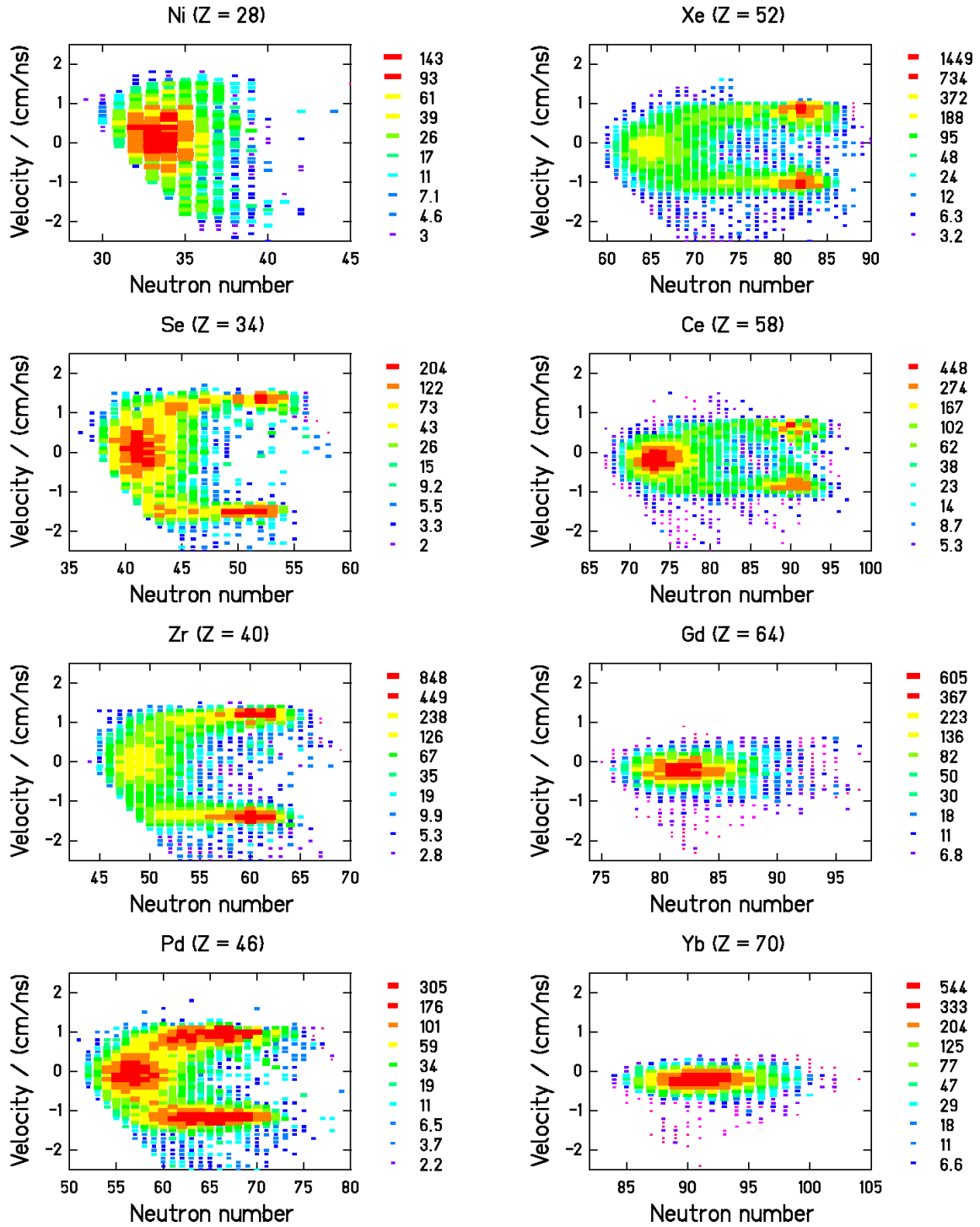
very precise evaluation!

DISCRIMINATION OF FISSION EVENTS



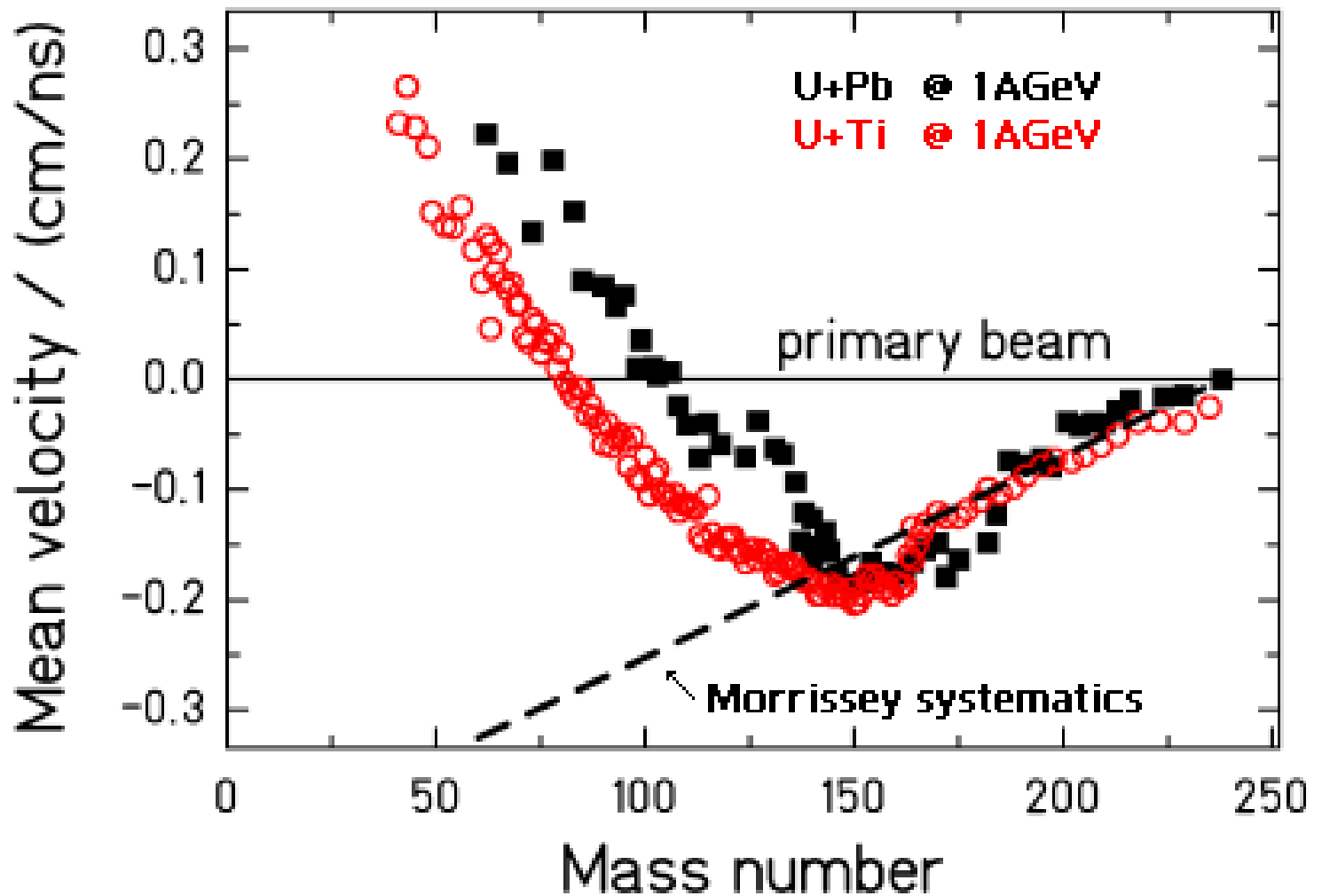
EXPERIMENTAL RESULTS

1 A GeV ^{238}U on lead



EXPERIMENTAL RESULTS

Mean velocities of fragmentation products



CONCLUSIONS

- Indications for the postulated response of the spectators to the participant blast.
- Selectively sensitive to the momentum dependence of the nuclear force.
- Precise velocity measurement of projectile fragments is a new tool to investigate the EOS of nuclear matter. (dedicated talk)