

PURPOSE AND STATUS OF THE *TRANSVERSITY PROJECT*

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Purpose and status of the Transversity Project



The Italian Ministry for
Instruction, University and Research

each year supports two-year Research Project of National Interest
(“**P**rogetti di **R**icerca **I**nteresse **N**azionale”, **PRIN**)

1. Scienze matematiche
2. Scienze fisiche
3. Scienze chimiche
4. Scienze della Terra
5. Scienze biologiche
6. Scienze mediche
7. Scienze agrarie e veterinarie
8. Ingegneria civile ed Architettura
9. Ingegneria industriale e dell'informazione
10. Scienze dell'antichità, filologico-letterarie e storico-artistiche
11. Scienze storiche, filosofiche, pedagogiche e psicologiche
12. Scienze giuridiche
13. Scienze economiche e statistiche
14. Scienze politiche e sociali

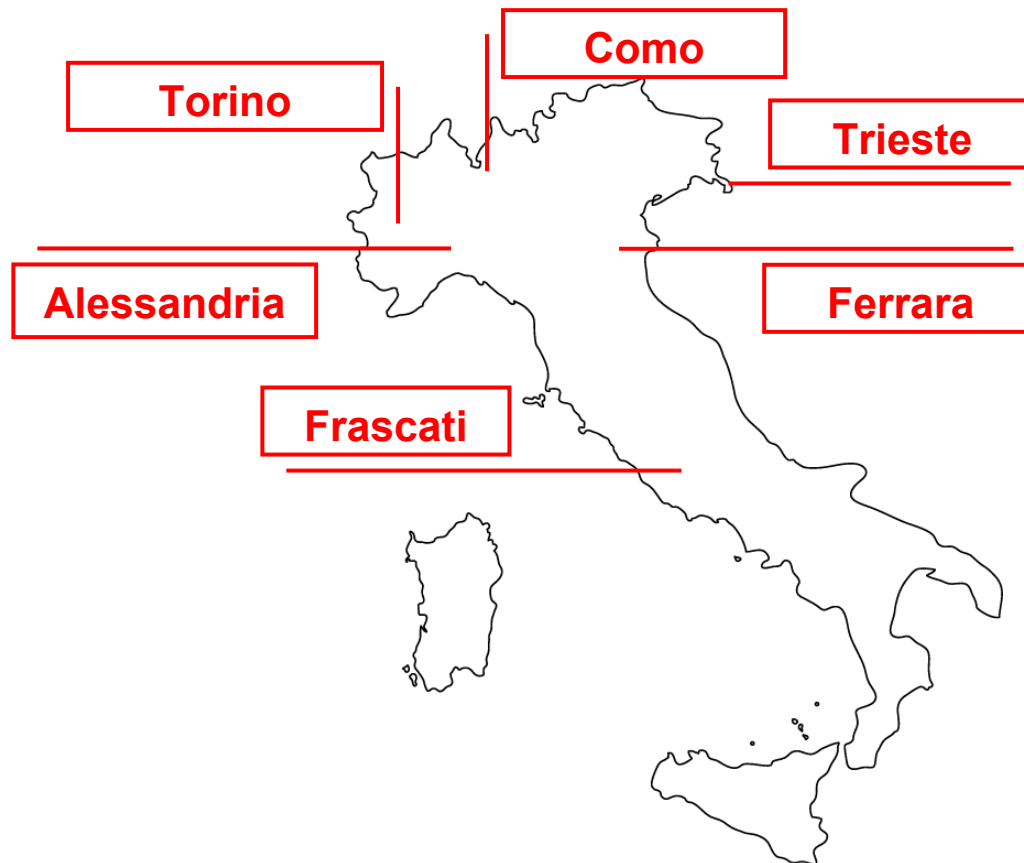
High competition !

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PRIN2003: *Measurement of the Nucleon Transversity* (approved)

→ **Transversity 2005**

PRIN2005: *Study of transverse spin effects in the nucleon* (proposed)



51 participants

- **theoretical physicists**
- **experimental physicists**
 - **COMPASS**
 - **HERMES**

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AIM:

To set up a solid and efficient collaboration between the theoretical and experimental Italian physicists (deeply involved in HERMES at DESY and COMPASS at CERN)

no Italian group is involved in the spin program at RHIC

Primary goal:

to identify unambiguous transverse spin phenomena of the nucleon through the study of experimental asymmetries in SIDIS of high energy leptons on transversely polarised proton and deuteron targets

Specific objectives:

- **experimental level:**
a more precise quantitative determination of the transverse-spin observables and the study of new channels in SIDIS and of new reactions
- **theoretical level:**
a better understanding of the observed effects and the identification of further candidate processes for measuring transversity

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MORE AMBITIOUS GOAL:

a **global analysis** of transversity and of related observables.

In short, this project consists of creating a

general and homogenous framework,

including the different processes that measure, in a direct or indirect manner, different combinations of the transverse-spin distribution and fragmentation functions

ALSO:

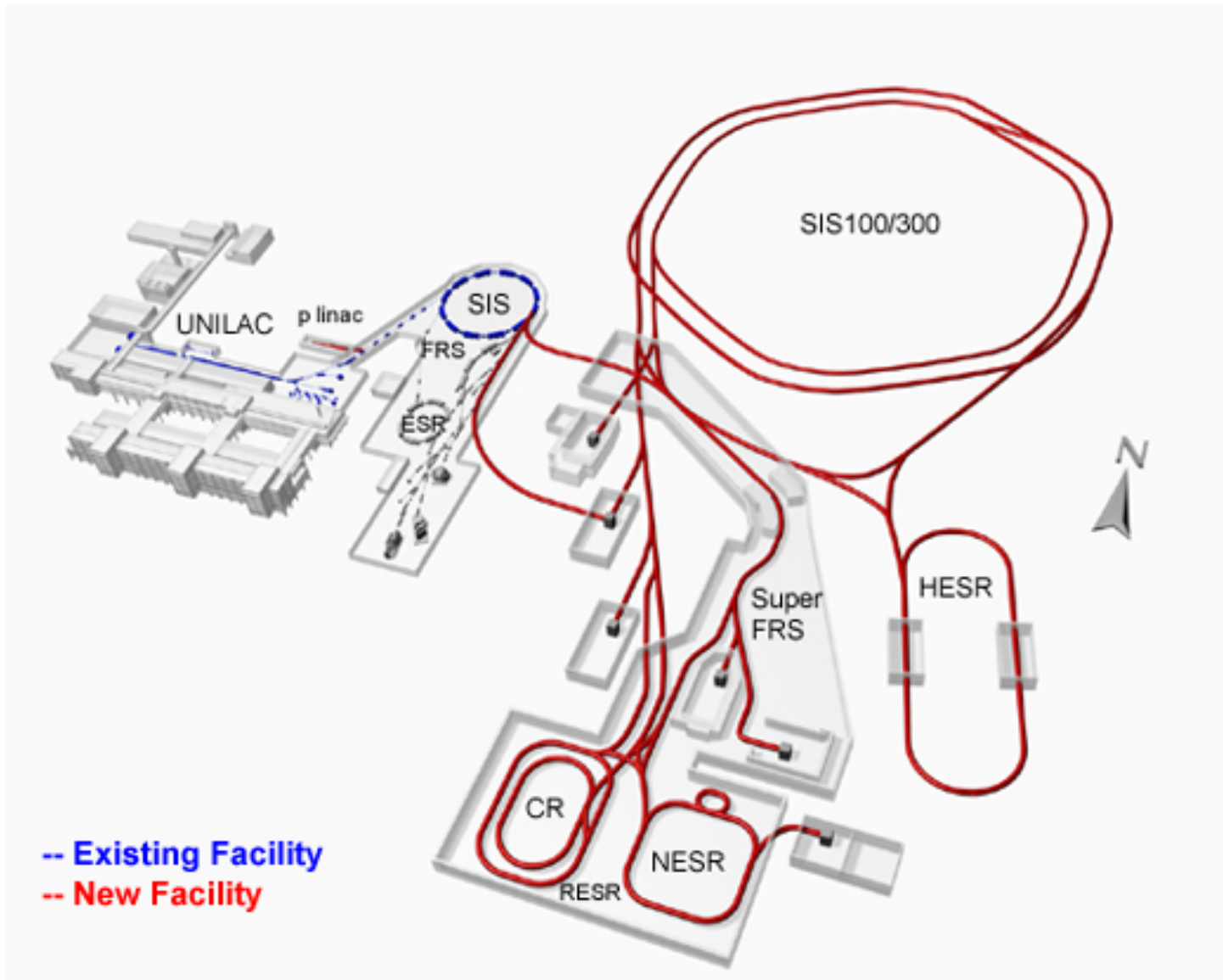
to promote the measurement of transversity at the new

antiproton facility at FAIR (GSI) in Darmstadt

via the measurement of the double-spin asymmetry of Drell-Yan pairs in the process $p\bar{p} \rightarrow l+l-X$.

Most of us involved in ASSIA or PAX

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Collaboration set up with Novosibirsk for a

**feasibility study for a
polarized proton-polarized antiproton collider at GSI**

1. a *green-field collider* is being studied
 - both the one-ring collider and the two-ring collider will be studied and compared
 - the asymmetric option (15 GeV + 3.5 GeV) will also be investigated
2. a realistic option for the GSI Laboratory will be elaborated, in collaboration with the GSI people

Conclusion and Outlook

- **We are grateful to MIUR for the support**

- **Let's look forward to an interesting and fruitful Workshop**