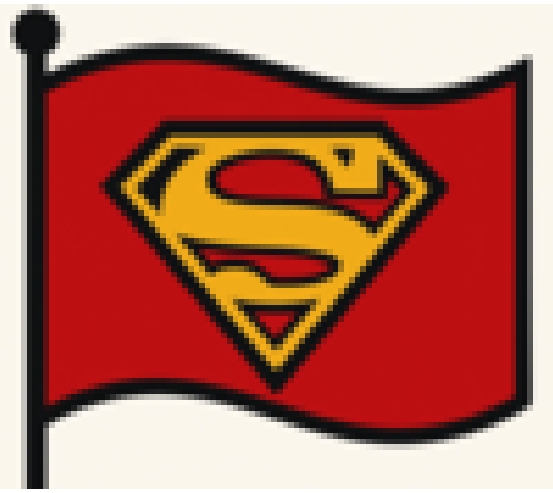
Mini-workshop on flag supermanifolds, related supergeometries and applications



Report of Contributions

https://indico.sissa.it/e/177

Contribution ID: **2** Type: **not specified**

Linear embeddings of complex supergrassmannians

Friday, February 13, 2026 10:00 AM (1 hour)

In the early 1980-ies I. Skornyakov and I proved that a two-sided complex supergrassmannian is not superprojective.
This demonstrated that the role of supergrassmannians in algebraic supergeometry cannot be the same as the role of grassmannians in algebraic geometry. In particular, it motivated the sudy of embeddings of one supergrassmannian into another supergrassmannian.This study has been delayed for 40 years, and in this talk I will explain if and how one supergrassmannian can be embedded into another supergrassmannian so that the pullback of the Berezinian canonical sheaf from the larger supergrassmannian is isomorphic to the canonical sheaf of the smaller supergrassmannian. I call such embeddings linear and will outline a classification of linear embedddings of (possibly isotropic) supergrassmannians into other (possibly isotropic) supergrassmannians. A possible application is a classification of linear ind-supergrassmannians. The Sato supergrassmannian is a linear supergrassmannian.

Presenter: Prof. PENKOV, Ivan (Constructor University Bremen)

Contribution ID: **3** Type: **not specified**

Graded coverings of supermanifolds and their applications

Friday, February 13, 2026 11:30 AM (1 hour)

In geometry, the notion of a covering space is classical and well established. A familiar example is the universal covering: $p : \mathbb{R} \longrightarrow S^1$, given by $t \mapsto \exp(it)$. Analogous constructions also appear in algebra, for instance in the theory of modules over rings, where one encounters flat or torsion-free coverings. Despite arising in different contexts, these coverings share a common underlying idea: an object from a given category is covered by objects belonging to a smaller (or different) category in such a way that certain universal properties are satisfied.
In the paper "Super Atiyah classes and obstructions to splitting of supermoduli space", Donagi and Witten introduced a construction of the first obstruction class to the splitting of a supermanifold. Later we observed that the infinite prolongation of the Donagi–Witten construction satisfies universal properties common for other coverings. In other words, this construction yields a covering of a supermanifold in the category of graded manifolds associated with the nontrivial homomorphism $\mathbb{Z} \longrightarrow \mathbb{Z}_2$. Furthermore, the space of infinite jets can also be viewed as a covering of a (super)manifold in the category of graded manifolds corresponding to the homomorphism $\mathbb{Z} \times \mathbb{Z}_2 \longrightarrow \mathbb{Z}_2$, given by $(m, n^-) \mapsto n^-$. (For ordinary manifolds, this homomorphism reduces to the trivial map $\mathbb{Z} \longrightarrow 0$.)
Our talk is devoted to the current state of the theory of graded coverings, including the general framework, key examples, and a presentation of our recent results.

Presenter: Prof. VISHNYAKOVA, Elizaveta (UFMG)

Contribution ID: **4** Type: **not specified**

Cotangent complexes and obstruction theories in supergeometry

Friday, February 13, 2026 2:30 PM (1 hour)

One of the most celebrated and far-reaching achievements in algebraic geometry is the concept of (perfect) obstruction theory introduced by Behrend and Fantechi. Roughly, this amounts to replacing unbounded cotangent complexes of (very singular) stacks with smaller complexes in order to produce and compute numerical invariants.
In this talk, we describe how this machinery can be generalized to the supergeometric setting, thanks to the powerful formalism of homotopical algebra. As a possible application, we hint at the construction of an obstruction theory for the moduli superstack of stable supermaps.
This is based on joint work in progress with U. Bruzzo, D. Hernández Ruipérez, and A. Ricolfi.

Presenter: Dr PAVIA, Emanuele (University of Luxembourg)

Contribution ID: **5** Type: **not specified**

Poincaré duality and supergravity

Friday, February 13, 2026 4:00 PM (1 hour)

In this talk I will discuss how Verdier–Poincaré duality specializes to families of supermanifolds in a relative setting. I will then show how this framework yields a genuinely supergeometric (and mathematically rigorous) formulation of supergravity. In particular, it provides a conceptual bridge between the component, geometric, and superspace approaches, clarifying their equivalence as different presentations of the same underlying structure.

Presenter: Dr NOJA, Simone (Univ. Bari)

Contribution ID: **6** Type: **not specified**

The superstack of coherent sheaves

Saturday, February 14, 2026 10:00 AM (1 hour)

We introduce superstacks and describe some of their basic features. As an example the superstack of coherent sheaves on a superprojective superscheme is constructed. A description of its bosonic reduction is given

Presenter: Prof. HERNÁNDEZ RUIPÉREZ, Daniel (Univ. Salamanca)

Contribution ID: **7** Type: **not specified**

TBA

Saturday, February 14, 2026 11:30 AM (1 hour)

Presenter: GRAFFEO, Michele (SISSA)

Contribution ID: **8** Type: **not specified**

Super Mumford form as a string measure

Saturday, February 14, 2026 2:30 PM (1 hour)

According to a proposal by Yuri Manin, we want to show that the super Mumford form is the natural measure for the perturbative computation of the string scattering amplitudes.
Starting from a formula provided by A. Voronov in 1988, we show how to get an expression for it in super-coordinates, which correctly reproduces the tree-level amplitudes for Neveau-Schwarz states, without the need to introduce ghosts and picture changing operators. We will also give some hints on how it works for Ramond states.

Presenter: Prof. CACCIATORI, Sergio (Univ. Insubria, Como)

Contribution ID: **9** Type: **not specified**

Stable supermaps

Saturday, February 14, 2026 4:00 PM (1 hour)

I will introduce the notion stable map from a SUSY curve to a fixed target superscheme and study their moduli space, which is a Deligne-Mumford superstack.

Presenter: Prof. BRUZZO, Ugo (UFMG & IGAP)