



## ALGEBRA SESSION

### The BNS invariants for surface braid groups.

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Math Department- Auditorium

#### Abstract.

The Bieri-Neumann-Strebel invariant  $\Sigma^1(G)$  of a finitely generated group  $G$  was first defined in 1987 [1], and it well known as an important object in Geometric Group Theory. Despite of its importance, there are only a few classes of groups for which  $\Sigma^1$  is already known. In 2015, N. Koban, J. McCammond and J. Meier obtain the BNS invariant for the pure braid groups of the disc [2]. We compute and explicitly describe  $\Sigma^1$  for the braid groups and the pure braid groups of some surfaces, namely, the sphere, the projective plane, the torus and the Klein bottle [3]. And, as further work, we are interested to know if we are able to compute the BNS invariant for others closed surfaces or punctured surfaces. Joint work with Wagner Sgobbi.

#### References

- [1] Bieri, R., Neumann, W. D., Strebel, R., *A geometric invariant of discrete groups*, Invent. Math, 1987.
- [2] Koban, N., McCammond, J., Meier, J., *The BNS-invariant for the pure braid groups*, Groups Geom. Dyn., 2015.
- [3] Pereiro, C. M., Sgobbi, W., *The BNS invariants of the braid groups and pure braid groups of some surfaces*, 2023. *arXiv:2308.12377*.