Referee Report for the paper entitled "Gröbner–Shirshov basis and Hochschild Cohomology of the Manturov Group Γ_5^4"

January 12, 2022

I recommend this paper for publication in Siberian Electronic Mathematical Reports.

The paper is interesting for specialists because the author uses the technique of algebraic discrete Morse theory to construct the Anick resolution (all differentials have been explicity described) and to calculate the first and the sectond Hochschild cohomology of the Manturov Group Γ_5^4 with coefficients in the trivial 1-dimensional bimodule over a field of charactersic zero.

The paper has a technical spirit and this is useful for further research.

I have no remarks for the calculating of the paper because all claims formulated correctly and all proofs are well readable and easy to understand and verify. However the author should write Gröbner instead of Grobner and Gröbner–Shirshov instead of Grobner Shirshov.