

Response to the reviews of the manuscript: “Concentration of  
Maxima and Fundamental Limits in High-Dimensional Testing and  
Inference” by Zheng Gao and Stilian Stoev submitted to  
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## Summary of the revision

We sincerely thank the managing Editor and the five anonymous referees for their very helpful and constructive suggestions. We really appreciate the reviewers’ time, effort, and thoughtful suggestions, which stimulated us to substantially revise and improve the manuscript. We begin with a high-level description of our edits and in the following section we respond to specific points raised by the reviewers.

- **(Summary)** The revised manuscript has now a brief introductory chapter and 6 substantive chapters, which amount to a total of 124 pages. As with the original submission, Chapter 2 reviews the statistical risks, estimation and testing procedures, as well as probability models for the errors used in the rest of the manuscript. It contains also a high-level summary of our results in the context of the existing literature and some auxiliary facts from probability and extreme value theory. For convenience of the reader, we have added statements of Slepian’s Lemma and the Sudakov-Fernique inequality (without proofs).

Chapter 3 provides a panorama of the phase-transition results in the signal detection and support estimation problems for the iid Gaussian error model. Its purpose is to emphasize ideas and provide an accessible account, including references to the state-of-the-art in the literature.

Chapters 4 through 7 contain the core of our contributions. We have revised substantially Chapters 4 and 5.

- **(Organization)** Following a suggestion of a reviewer (**R2**), we have included most proofs in the text right after the corresponding claims (theorems, propositions, lemmas). In the interest of space and to conform with the format of the SpringerBriefs series, we no longer include “Exercise” sections.

Last but not least, to better balance the exposition, we decided to divide the previous Chapter 4 into two new chapters (now Ch. 4, entitled “Exact Support Recovery Under Dependence”, and Ch. 5 “Bayes and Minimax Optimality”). In addition to making all chapters more manageable and of about equal length, it exposes more clearly our contributions. The results

contained in Chapters 4 and 5 as well as the more probabilistic Chapter 6 and more applied Chapter 7 are original and new contributions to the literature.

## **Responses to specific points raised by the reviewers**