（ 続紙 1 ）

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論文題目	Topics in random matrices and statistical machine learning.		

（論文内容の要旨）

This is a report on the results contained in Ms Sushma Kumari ' s PhD thesis. It is the reunion of two largely unrelated research projects, one on Random Matrix Theory, and one on Machine Learning Theory.

The first chapter is about Random Matrix Theory, specifically, about Wishart matrices, who were introduced by the founder of the theory. An important question is to compute its moments. More recently, the inverse of this matrix, when it exists, has started to play an important role too in many applications. The moments of its inverse was computed for a family of parameters, but it was not clear whether the computation was exhaustive. Kumari checked this. She published a paper on this part in IDAQP in 2018.

（論文審査の結果の要旨）

The second and most substantial chapter is about Machine Learning, and was completed under the cosupervision of Collins and Prof Vladimir Pestov. In the case of binary classifiers, learning rules are an important notion, they depend on a random learning sample and are hoped to converge to the best classifier. One of the most important classifiers is the k-NN classifier (k-nearest neighbours). It is known that to be universally consistent if the space is a subset of a finite dimension vector space. Sushma Kumari extended this results quite substantially, and identified the right metric notion to ensure consistency. She exhibited obstructions to consistency in some special metric spaces. She also studied in detail the important case of ties. The results from this paper are being currently prepared into a manuscript that will be submitted to “Journal of Machine Learning Research”.

2018年7月17日に公開講演および調査委員会を行い、調査委員会では，Sushma Kumari氏の研究成果は理学（博士）の称号を授与するに十分であると認定しました。

要旨公開可能日：　　年　　月