Esseen 100 Years

Report of Contributions

https://indico.uu.se/e/esseen100

Contribution ID: **0** Type: **not specified**

From Esseen to Stein

Tuesday, 18 September 2018 10:00 (50 minutes)

One key ingredient in Carl-Gustav Esseen's proof of the Berry-Esseen bound is a smoothing inequality that quantifies the distance between two distribution functions in terms of the distance between their characteristic functions. What is well-known is how to use this inequality with a subsequent Taylor expansion of the characteristic functions to proof the Berry-Esseen bound. What is not so well-known is that Esseen's inequality can also be combined with ideas introduced by Charles Stein to obtain an alternative proof of the Berry-Esseen bound.

In this talk we will give a gentle introduction to Esseen's work on the Berry-Esseen bound and to some ideas of Stein's method.

Presenter: RÖLLIN, Adrian (National University of Singapore)

Contribution ID: **1** Type: **not specified**

Mixing Times for Random Walks on Dynamical Percolation

Monday, 17 September 2018 14:00 (40 minutes)

In this talk, I will discuss the mixing behavior of random walk on dynamical percolation. In this model, the edges
of a graph G are either open or closed and they refresh their status at rate μ, while at the same time a random walker moves on G
at rate 1, but only along edges which are open. Restricting to the d-dimensional torus with side length n, I will discuss the mixing time
(how long it takes to get close to equilibrium) as a function of n both when the bond parameter is subcritical for percolation and when it is supercritical for percolation.
The behavior in these two regimes is very different. No background in percolation or mixing times of Markov chains will be assumed.

This is based on two joint works, one with Y. Peres and A. Stauffer and one with Y. Peres and P. Sousi.

Presenter: STEIF, Jeffrey E.

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

On the compound Poisson approximation for convolutions of probability measures

Tuesday, 18 September 2018 13:00 (50 minutes)

We consider the approximation of a convolution of possibly different probability measures by a compound Poisson distribution and also by related signed measures of higher order. We present new total variation bounds having a better structure than those from the literature. A numerical example illustrates the usefulness of the bounds. The proofs use arguments from [1] and [2] in combination with new smoothness inequalities, which could be of independent interest. The talk is based on [3].

References:

[1] Kerstan, J. (1964). Verallgemeinerung eines Satzes von Prochorow und Le Cam, Z. Wahrscheinlichkeitstheorie und Verw. Gebiete, 2, 173-179.

[2] Roos, B. (1999). On the rate of multivariate Poisson convergence. J. Multivariate Anal., 69, 120-134.

[3] Roos, B. (2017). Refined total variation bounds in the multivariate and compound Poisson approximation. ALEA, Lat. Am. J. Probab. Math. Stat. 14, 337-360.

Presenter: ROOS, Bero

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

The unexpected influence of a mathematician - on engineering - and on statistics

Tuesday, 18 September 2018 13:55 (50 minutes)

I will describe some crucial steps in the history of Swedish mathematical statistics, starting with the first timid steps at the beginning of the twentieth century, finishing with Carl Gustav Esseen's almost 20 years as professor at the Royal Institute of Technology, 1949-1967. I will illustrate the great influence he had on developing technologies as examples of the necessary but delicate relations between different sciences and personalities.

The talk is based on the article "Why distinguish between statistics and mathematical statistics – the case of Swedish academia", International Statistical Review, (2018), by Peter Guttorp and myself.

Presenter: LINDGREN, Georg

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

Berry-Esseen for summands Zolotarev-zeta-close to normal

Monday, 17 September 2018 13:05 (50 minutes)

See attached abstract here

Primary author: MATTNER, Lutz (Universität Trier)

Presenter: MATTNER, Lutz (Universität Trier)

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

Asymptotics for Petersburg games with trimming

Monday, 17 September 2018 15:45 (30 minutes)

A sequence of Petersburg games is considered, and the asymptotics of the total gain is demonstrated.
When the largest gains are deleted the total has another asymptotics which can be derived.

Presenter: MARTIN-LÖF, Anders

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

Conditions for convergence of random coefficient AR(1) processes in higher dimensions

Tuesday, 18 September 2018 11:20 (20 minutes)

See attached abstract

Presenter: ERHARDSSON, Torkel

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

Esseen's contribution and recent results in investigation of the rate of convergence in the central limit theorem

Monday, 17 September 2018 11:15 (50 minutes)

Starting from the central limit theorem due to Lyapunov we give an overview of Esseen's fundamental results in investigation of the rate of convergence in the CLT. We present a wide class of Berry-Esseen-type inequalities providing estimates of the accuracy of the normal approximation to distributions of sums of independent random variables in various metrics and involving various integral-type characteristics of the random summands coming back to the pioneer works of Berry (1941), Esseen (1942, 1969), and Osipov (1965). Finally, being inspired by Esseen's asymptotic expansion (1945) we provide a new asymptotic and still explicit moment-type estimate of the rate of convergence in the CLT which is optimal in the sense that it's main term as a function of the standardized average third-order moment of random summands coincides with that in Esseen's asymptotic expansion for the Kolmogorov distance. We also look at the problem of classification of the appearing asymptotically exact constants and present their exact values or two-sided bounds.

Presenter: SHEVTSOVA, Irina

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

Peak numbers and other statistics of random permutations

Tuesday, 18 September 2018 11:40 (30 minutes)

Presenter: JANSON, Svante

Contribution ID: **10** Type: **not specified**

Welcome

Monday, 17 September 2018 11:00 (10 minutes)

Presenter: GUT, Allan

Contribution ID: **11** Type: **not specified**

•

Monday, 17 September 2018 16:20 (15 minutes)

Presenter: THEDÉEN, Torbjörn