Přednášky se konají v 17:00 v posluchárně M2 na Janáčkově nám. 2a v Brně, pokud není explicitně uvedeno jinak.

15. října

Josef Janyška (Masarykova univerzita)
Bandly, konexe a zobecněné redukčni věty

Abstrakt:

Redukční věty pro klasickou (lineární, symetrickou) konexi na varietě jsou významné věty teorie konexí staré více než 100 let. V prednášce podám formulaci těchto vět v jazyce moderní diferenciální geometrie a jejich zobecnění pro obecné lineární konexe. Součástí prednášky bude stručné vysvětlení pojmu bandl (vektorový, hlavní, přirozený) a konexe (klasická, hlavní, obecná).

29. října

Alois Kufner (Matematický ústav AVČR, Praha)
Hardyho nerovnost a její aplikace

19. listopadu

Jozef Gruska (FI, Masarykova Univerzita)
Quantum information processing primitives

Abstrakt:

Various interesting/important results have recently emerged that demonstrate that there is a large variety of (surprisingly) simple and very different quantum primitives that are universal, in some reasonable sense, for quantum information processing. On one side, this increases a chance that soon some technology emerges that will allow to realize powerful quantum processors. On the other side, the existence of such a variety of universal quantum information primitives give rise to many interesting theoretical problems that require advance mathematical tools to be dealt with. In the talk I will give an overview of the recent developments concerning quantum information processing primitives. Moreover, I will also give a brief general overview of the current developments in quantum information processing and of the main quantum information processing challenges that are challenges also for mathematics and

mathematicians.

10. prosince

Michael G. Schimek (Karl-Franzens-University Graz)
Smoothing and Penalization in Biostatistics

Abstrakt:

For almost fifteen years smoothing techniques are playing an important role in biostatistics. The reason is clear: relationships between variables are often quite complicated and the usual error assumptions do not necessarily hold. More recently, penalized methods seem to gain importance in this area of application, especially in connection with genomic research. There are numerous classification task characterized by far more variables than cases, exactly the other way round as assumed for conventional statistical methods. In this talk smoothing and penalization are motivated. Further their formal connections are discussed. Finally two typical bioscience applications - one making use of generalized additive models (in medical imaging) and the other making use of penalized logistic regression (in gene expression analysis) - are presented.

15. ledna

A. Rod Gover (University of Auckland)
The de Rham complex and conformal geometry

Abstrakt:

The de Rham complex gives one of the most fundamental connections between local differential information and global topological information. A conformal manifold is a manifold equipped with a notion of angle but not length. It turns out that on such structures there are new elliptic complexes involving differential forms that provide new links between local and global information. In this elementary exposition the ideas concerned will be sketched.