JACOBS
UNIVERSITY

Summer School Program

"Progress in Mathematics for Communications Systems"

July 2 – 13, 2007

1ˢᵗ Week, July 2-6

Monday

09:00 - 10:30	Opening
	John Cioffi "Vectored DSLs, the Copper PON Substitutes"
Coffee Break	
11:00 - 12:30	Thomas Strohmer "On the Role of the Heisenberg Group for Communication Systems"
Lunch	
14:15 - 15:45	Welcome Address Prof. Kramer, Dean of the School of Engineering and Science
	Werner Kozek "Multicarrier Modulation in Wireless and Wireline: Overview and Open Issues"
Coffee Break	
16:15 - 17:30	Amir Leshem "Applications of Game Theory to Multiuser Communication over Interference-limited Channels"
17:30 - 18:00	Informal Introduction Presentation of Participants
Dinner	
19:00	Local Tour to Bremen Vegesack

1st Week, July 2-6

Tuesday

09:00 - 10:30   Steffen Trautmann
                   "Equalizer Variants for DMT"

Coffee Break

11:00 - 12:00(+)   Discussion Industry and Scientific Challenges

Lunch

14:00 - 15:00   Thomas Magesacher
                   "Spectrally Efficient Multicarrier Modulation"

Coffee Break

15:30 - 17:00   Götz Pfander and Werner Kozek
                   "Time-frequency Analysis"

17:00 - 17:30   Henning Paul
                   "MIMO Channel Measurements With a Hardware Demonstrator

17:30 – 18:00   Shuying Shi
                   "Weighted sum-rate optimization for Multiuser MIMO systems
                   with Linear Equalization"

Dinner

20:00   Football Match (Rain out)
                   Electrical Engineers vs. Mathematicians

1st Week, July 2-6

Wednesday

09:00 - 09:50	Rolf Johannesson "Minimality Questions for Convolutional Encoders" - Part I

Coffee Break

10:20 - 11:10	Rolf Johannesson "Minimality Questions for Convolutional Encoders" - Part II
11:20 - 12:00(+)	Maja Loncar "List Decoding"

Lunch

13:45	Excursion to Bremen including Guided Tour of City Center and Town Hall

1st Week, July 2-6

Thursday

09:00 - 10:30 Harald Haas
       "Capacity Issues of Wireless Networks"

Coffee Break

11:00 - 12:30 Thorsten Koch
       "Planning Cellular Networks" (Tutorial and Exercise)

Lunch

14:00 - 15:30 Martin Grötschel
       "Frequency Assignment"

Coffee Break

16:00 - 17:00 Peter Oswald and Werner Henkel
       "PAR Reduction - Mathematical and Realization Aspects"

17:00 - 17:30 Jörg Bühler
       "BC-MAC Duality and Capacity Computation for the Binary
       MAC"

Dinner

20:00   "Good Bye Lenin", Jacobs University Movie Theatre

1st Week, July 2-6

Friday

09:00 - 10:30   Thorsten Koch
                 "Integer Optimization: Mathematics, Algorithms
                 and Applications"

Coffee Break

11:00 - 12:30   Amir Leshem
                 "Distributed Spectrum Management for DSL"

Lunch

14:00 - 15:30   Martin Schubert
                 "Interference Calculus I – An Axiomatic Characterization of
                 Interference in Wireless Networks"

Coffee Break

16:00 - 17:30   Martin Schubert
                 "Interference Calculus II – Algorithms for Resource Allocation"

2ⁿᵈ Week, July 9-13

Monday

09:00 - 10:30   Michael Stoll
"Basics of Finite Fields"

Coffee Break

11:00 - 12:30   Jossy Sayir
"Iterative Decoding and LDPC Codes" - Part I

Lunch

14:00 - 14:50   Jossy Sayir
"Iterative Decoding and LDPC Codes" - Part II

15:10 - 16:00   Jossy Sayir
"Iterative Decoding and LDPC Codes" - Part III

Coffee Break

16:30 - 18:00   Amin Shokrollahi
"Fountain Codes on the Erasure Channel"

2nd Week, July 9-13

Tuesday

09:00 - 10:30   Amin Shokrollahi
"Raptor Codes on Binary Symmetric Channels"

Coffee Break

11:00 - 12:30   Werner Henkel
"Reed-Solomon Codes"

Lunch

14:00 - 14:40   Fangning Hu
"Intuitive Understanding of Iterative Decoding"

14:40 - 15:20   Khaled Hassan
"Bit Loading to Achieve UEP"

Coffee Break

15:50 - 16:30   Neele von Deetzen
"UEP with Turbo and LDPC Codes"

16:30 - 17:00   Apirath Limmanee
"Aspects of Network Coding"

2ⁿᵈ Week, July 9-13

Wednesday

Excursion to Bremerhaven and Cuxhaven-Duhnen

09:00	Gathering
09:15	Bus Trip to Bremerhaven
10:15	German Emigration Center Bremerhaven

Lunch

13:15	Bus to the Harbor Area Bremerhaven, including Viewing Platform onto the Container Harbor
14:00	Bus to Cuxhaven-Duhnen
	Walking-Tour on the Tidelands, <u>please note:</u>
	You should wear shorts or a pair of trousers that you can roll up. Please bring a daypack (if at hand), a towel and rainjacket.
18:00	Bus back to Jacobs University

2nd Week, July 9-13

Thursday

09:00 – 09:30	Oshri Naparstek "Information theoretic approach for radar beamforming design"
09:30 - 10:00	Emily King "Frame theory"
10:00 – 10:30	Niklas Grip "A discrete model for the efficient analysis of time-varying narrowband communication channels"
Coffee Break	
11:00 - 12:30	Götz Pfander " Operator Sampling"
Lunch	
14:00 - 14:30	Markus Hansen "An introduction to approximation theory"
14:30 – 15:00	Chris Flake "Wedgelets"
15:00 – 15:30	Felix Krahmer "Sigma-delta modulation"
Coffee Break	
16:00 - 16:40	Tomas Nordström "Dynamic Spectrum Management Revisited"
16:40 - 17:30	Poster session (turn page for details)

2nd Week, July 9-13

Thursday (continued)

16:40 – 17:30   Poster Session (location to be announced)

Ali Massoud
"Broadband noise cancellation using wavelet packet transform and local trigonometric bases"

Marc Selig
"Adaptive Power loading for BICM-OFDM MIMO systems with outdated channel state information"

Mario Westmeister
" Enhancement of IEEE 802.15.9 by using cooperative transmission"

Thomas Edlich
"Feedback – Aided selective subspace retransmission for outage-free spatial multiplexing"

Zijang Ju
"Efficient channel description in time-frequency domain with application to flexible radio"

2nd Week, July 9-13

Friday

09:00 - 09:30   Humberto Neto
"Collaborative coding multiple access"

09:30 – 10:00   Chen Koker
"LDPC on BEC decoding"

10:00 – 10:30   Reza Moosavi
"Subband coding"

Coffee Break

11:00 - 12:30   Concluding discussion

Lunch