

# Communication networks beyond the capacity crunch – further discussion

Wednesday 13 – Thursday 14 March 2015

Professor Andrew Ellis, Professor Sir David Payne CBE FREng FRS and Professor David Saad

(Draft programme – subject to change – correct as of 17 April 2015)

THE  
ROYAL  
SOCIETY

DAY 1			
SESSION 1: Overcoming fundamental obstacles Chair: Fatima Garcia Gunning		SESSION 2: Enhancement to the physical layer Chair: David Richardson FREng	
09.00	Welcome by Royal Society & Andrew Ellis		
09.05	<b>Fatima Garcia Gunning</b> High capacity enablers – science and technology	13.30	<b>David Richardson FREng</b> Emerging technical approaches to scaling optical fibre networks
09.35	Discussion	14.00	Discussion
09.50	<b>Son T. Le</b> Communication beyond the nonlinear-Shannon limit	14.20	<b>Chigo Okonkwo</b> High density space division multiplexed transmission systems
10.05	<b>Domanç Lavery</b> An asymptotically zero increase in capacity: why compensating nonlinearity will never meet capacity demands	14.35	<b>Kai Shi</b> Capacity and complexity increase in MIMO-SDM systems
10.20	Discussion	14.50	Discussion
10.40	Coffee	15.10	Coffee
11.10	<b>Behrad Gholipour</b> Beyond the crunch with specialty fibres	15.40	<b>Hyunchae Chun</b> Visible light communication using Gallium Nitride micro-LEDs
11.20	<b>Alex Alvarado</b> Optical communication systems with soft-decision FEC: replacing the FEC limit paradigm	15.50	<b>Kevin Chung-Che Huang</b> Telecommunications beyond silicon: one atom thick chalcogenide photodiodes
11.30	<b>Vincent Sleiffer</b> High capacity optical fibre transmission experiments using multiple modes	16.00	<b>Yongmin Jung</b> Optical amplifiers for space division multiplexed transmission
11.55	<b>Mariia Sorokina</b> Regeneration limit of classical Shannon capacity	16.25	<b>Natalie Wheeler</b> Hollow core photonic bandgap fibres for ultra-high capacity data transmission
12.10	Discussion	16.40	Discussion
12.30	LUNCH	17.00	CLOSE

DAY 2			
SESSION 3: Future networks Chair: Dimitra Simeonidou		SESSION 4: Efficient methods to utilise communication networks Chair: Andrew Lord	
09.00	<b>Dimitra Simeonidou</b> Towards ultimate convergence of all networks	13.30	<b>Andrew Lord</b> Solving the bigger problem: point-point transmission in the broader network context
09.30	Discussion	14.00	Discussion
09.50	<b>Ariel Gomez Diaz</b> Towards terabit wide-coverage indoor optical wireless communications	14.20	<b>Evangelos Mellios</b> Optimising the MIMO Wi-Fi performance
10.05	<b>Dushyantha Basnayaka</b> Orders of magnitude higher throughput in cellular communications by optical attocells	14.35	<b>Zhixin Liu</b> Practical considerations on discrete multi-tone transmission for cost-effective access networks
10.20	Discussion	14.50	Discussion
10.40	Coffee	15.10	Coffee
11.10	<b>Mariam Kiran</b> Engineering emergence for large-scale cyber physical systems through software	15.40	<b>Siming Zhang</b> From 4G LTE-A to 5G massive MIMO – theory, simulation and testbed
11.20	<b>Funmilayo Ogunkoya</b> Optimisation technique for optical OFDM systems	15.50	<b>Raúl García-Patrón Sánchez</b> Quantum fundamental limit to optical communication
11.30	<b>Paul Anthony Haigh</b> Seamless and adaptive interfaces for wired and multi-technology wireless for future converged networks	16.00	<b>Marco Ruffini</b> Tackling the capacity crunch: an attempt to rationalisation and mitigation
11.55	<b>Ehsan Sooudi</b> High fidelity optical carrier dissemination using coherent communication techniques: HIPERFREQ Project	16.25	Discussion and closing remarks
12.10	Discussion	16.45	CLOSE
12.30	LUNCH		