

Overview of Last Ionospheric Radio Systems and Techniques (IRST) Conference 18-21 July 2006 London, UK

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Presentation Overview



- Presentation Overview
- Conference Information
- Overview of Sessions
- A few papers ...
- Summary

- The 10th IET Conference on Ionospheric Radio Systems and Techniques
 - Known previously as “HF Radio Systems and Techniques” (since 1985)
 - Conference held every 3 years
 - Organized by The Institution of Engineering and Technology (IET)
 - Formerly the IEE
 - 18-21 July 2006
 - Venue
 - The Royal Society of Medicine, London, UK
 - Over 100 attendees from 17 countries

Overview of Sessions



- Tuesday 18 July
 - Session 1
 - Welcome
 - Invited Speaker - “Future of the Ionosphere ...”
 - Session 2A and 2B
 - Ionospheric Measurements I
 - Systems
 - Session 3A and 3B
 - Ionospheric and Trans-Ionospheric Sounding
 - Networks 1
 - Session 4A and 4B
 - HF Antennas
 - HF Channel Modeling 1

Overview of Sessions (cont.)



- Wednesday 19 July
 - Session 5A and 5B
 - Ionospheric Measurements II
 - Receivers and Transmitters
 - Session 6A and 6B
 - HF Channel Modeling II
 - Signal Processing and Coding
 - Session 7A and 7B
 - HF Noise and Interference I
 - Networks II
 - Session 8A and 8B
 - Trans-Ionospheric Scintillation and TEC
 - Spectrum Management

Overview of Sessions (cont.)



- Thursday 20 July
 - Session 9A and 9B
 - Ionospheric Mapping and Data Assimilation
 - HF Modems and Waveforms
 - Session 10 – Poster Session
 - Session 11A and 11B
 - Digital Radio
 - HF Direction Finding
 - Session 12A and 12B
 - HF Noise and Interference II
 - General Interest

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- Modern HF Communications for a Modern Military –
Delivered Through the Defence High Frequency
Communications Service
 - Spalding, Corner
 - UK system similar to Scope Command
 - 1300Km HF Radio Link with a 30 kbits/s Data
Transfer Rate
 - Perrine, Lemur, et. al.
 - 9 kHz bandwidth

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- Use of HF for Extended-range Combat Net Radio (CNR) Communications
 - Koski
 - Network and Capacity Issues delivering digital voice over HF
 - Potential of the Fixed Frequency HF communication medium in the upgrading NATO Tactical Data Link 22
 - Kotlowski, Grob
 - New family of waveforms providing up to 7893 bps for Link 22

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- Electrically Small Half-loop Antenna Analysis by Numerical Emulation
 - Packer, Diez
 - Antenna modeling of half-loop antennas (compared to empirical data)
 - An Antarctica to Spain HF Link: Oblique Sounding Results
 - Vilella, Socoro, et. al.
 - Results of 2-16 KHz bandwidth soundings of link

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- Channel Estimation for Long Distance HF Communications based on OFDM Pilot Symbols
 - Aquilue, Bergada, et. al.
 - Results presented for channel estimation over a 12700 km link
 - The Effects of Channel Variability on High Data Rate HF Communications
 - Furman, Nieto
 - Using STANAG 4538 to sound and characterize different HF frequencies

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- A DS-SS Signaling Based System Proposal for Low SNR HF Digital Communications
 - Deumal, Vilella, et. al
 - 5156 Hz Bandwidth, 57 bps Waveform + performance on a 12700 Km link
 - The Role of HF 2000 in a network Based Defence
 - Bergzen, Akerlund
 - Description of Swedish HF-2000 system
 - Advanced HF Spectrum Management Techniques
 - Arthur, Taylor, Eddie
 - Using band of frequencies instead of fixed allocations

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- Analysis of Multiple Frequency HF Networks Versus Single Frequency Token Ring Networks
 - Gillespie, Trinder
 - Compares using STANAG 5066 with ALE on multiple frequencies versus single frequency token ring
 - WRC-07 and Future HF Spectrum Usage
 - Ritchie
 - Discussion on 4-10 MHz spectrum, competition for allocations and initiatives to help solve problem
 - Constant-Amplitude Waveform Variations of US MIL-STD-188-110B and STANAG 4539
 - Nieto, Furman
 - Applying GMSK to lower data rate waveforms

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- Multicarrier HF Modems with turbo Structures for Data Transmission
 - Raos, Zazo, et. al
 - Comparing Coded OFDM and OFDM-CDMA with turbo detection and using multiple bands
 - Parameters for Automatic Modulation Recognition of HF Signals
 - Giesbrecht, Clarke
 - Discussion of parameter extraction and feature selection

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- Digital Radio Mondiale: DRM Digital AM Applications for Defence and Broadcast Markets
 - Gordon, Briggs
 - DRM system outlined and two case studies HF data broadcasting
 - Short-to-ship Data Transmission Utilizing the DRM System
 - Heuberger, Bartsch, Kilian
 - Applying DRM to short-to-ship broadcasts

- Full conference proceedings available at
 - <http://scitation.aip.org/dbt/dbt.jsp?KEY=IEECPS&Volume=2006>
 - Or Can go to <http://www.ietdl.org/CP> and then click on available conferences
- Excellent conference with many interesting presentations
 - Some presentations were recorded and available from IET online