

吳仁銘(Jen-Ming Wu)教授

通訊工程研究所/電機工程學系

國立清華大學

(O)03-5162211 @台達館925

Email: jmwu@ee.nthu.edu.tw

https://www.ee.nthu.edu.tw/jmwu/

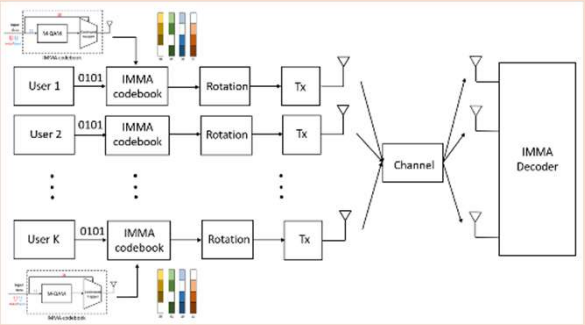


學生實驗室 @劉炯朗館611室

Wireless Signal Processing – Systems, Hardware, and Software

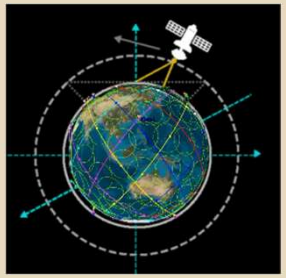
Wireless Fundamentals

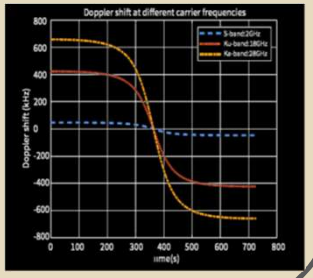
- Modulation and coding
- Random multiple access
- Covert communications
- Deep learning/ML for communications



B5G/6G PHY

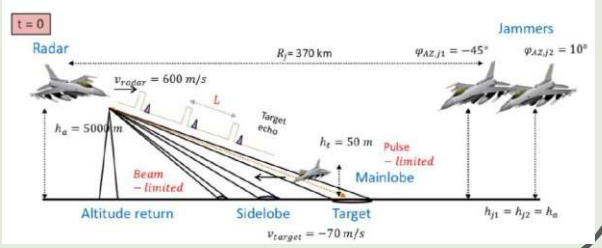
- Baseband signal processing
- Integrated sensing and communications (ISAC)
- LEO satellite communications
- Software define radio (SDR)
- 3GPP Beyond-5G/6G





Phased Array/MIMO Radar

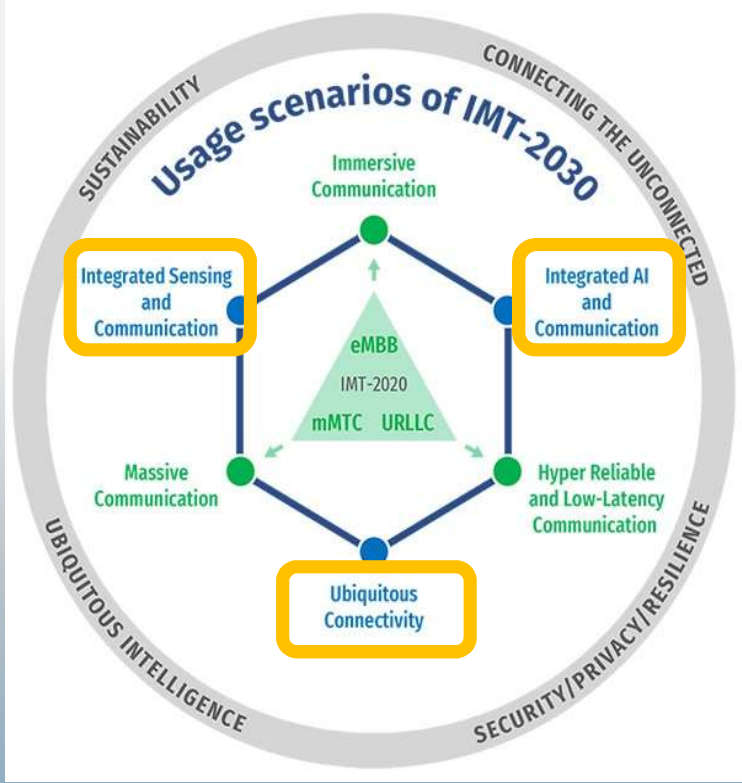
- Pulsed Doppler radar
- Space-time adaptive processing (STAP)
- Clutter and jammer interference suppression
- Training for radar target detection



6G Next-Generation Communications Research

- **Ubiquitous Connectivity - over Non-Terrestrial Network (NTN)**

  - Satellite Communication test bed for NTN
  - Doppler Compensation for LEO Satellite Downlink OFDMA Systems
  - Integrated LEO Satellite and Multi-UAV-Enabled Marine IoT Networks
  - Multi-agent multi-armed bandit RL in Multi-LEO Satellite
  - High gain phased array utilizing matrix-sum and tunable amplifier



- **Integrated AI and Communications**

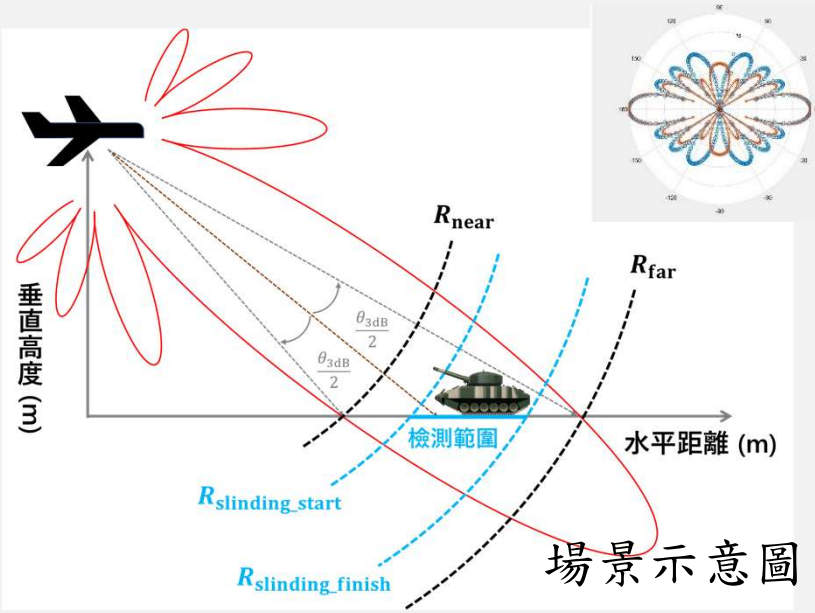
  - Deep learning timing advance for multi-user LEO synchronization
  - Federated deep reinforcement learning for energy efficient LEO
  - Codebook design of all index modulation with DRL
  - Federated Learning in optical Inter-LEO satellite constellation

- **Integrated Sensing and Communications (ISAC)**

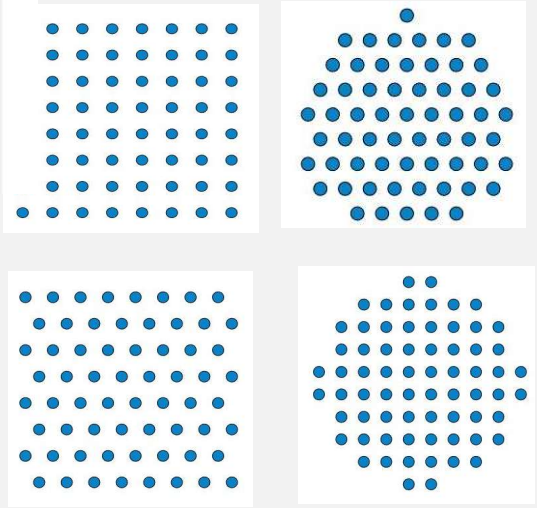
  - ISAC functionality and architecture
  - Networked ISAC for UAV detection
  - Semantic communications
  - OTFS ISAC signaling optimization
  - ISAC for physical layer security
  - Ambiguity and accuracy optimization

IEEE ComSoc IEEE Communications Society | IEEE VTS IEEE Vehicular Technology Society | IEEE ICC | IEEE GLOBECOM | IEEE INFOCOM

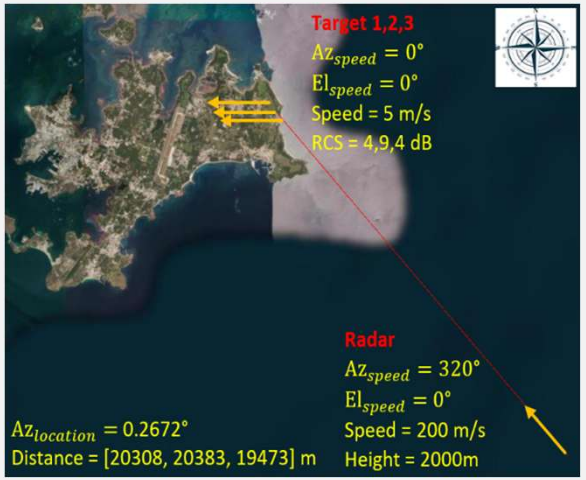
空對地/空目標搜索追蹤雷達之大型陣列天線訊號處理



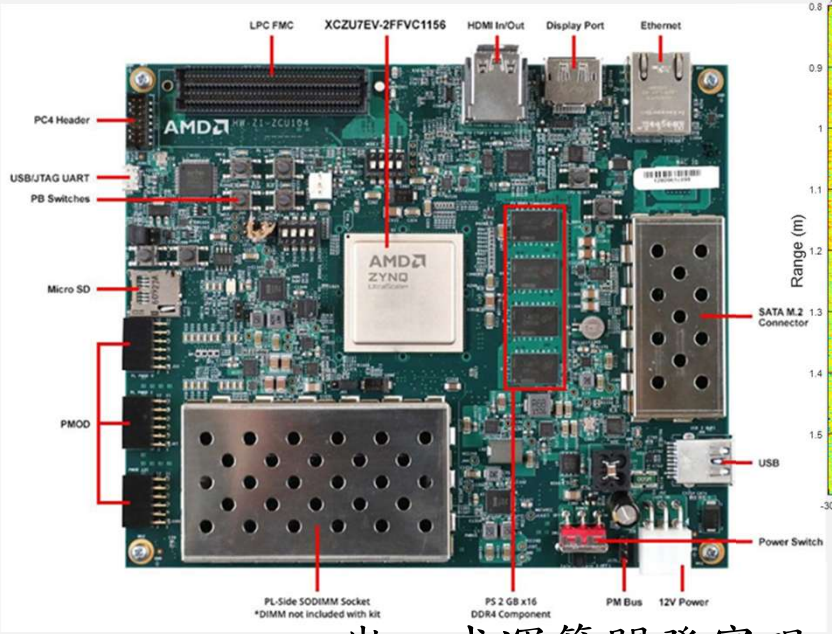
場景示意圖



各式陣列天線排列



海/地形雜波干擾消除



嵌入式運算開發實現

