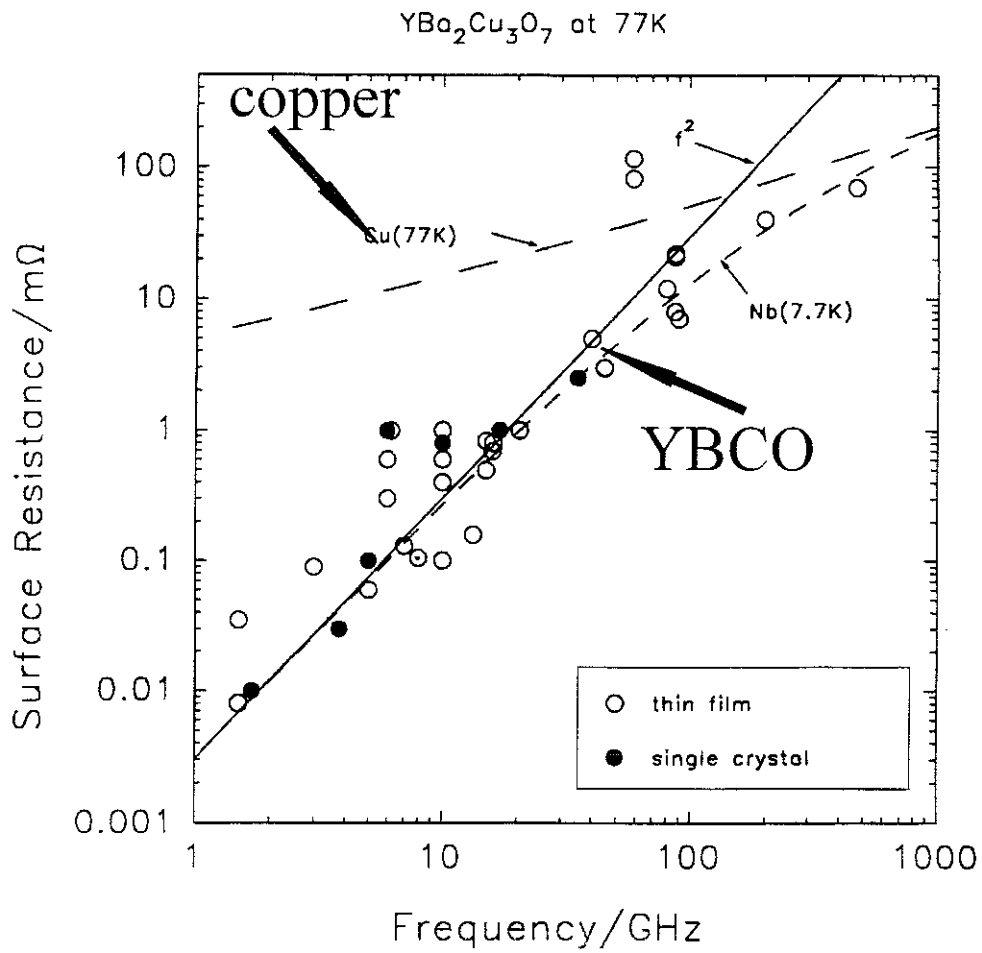


# Superconducting microwave filters

Prof. Mike Lancaster  
The University of Birmingham  
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Engineering

- Introduction to HTS
- A Mobile Communications  
Superconducting Receiver
- Ferroelectric/HTS components
- Superconducting delay line filters
- Superconducting lumped element filters
- Slow wave filters

# Surface Resistance of YBCO films



World-wide data for the surface resistance of single crystals and thin films of YBCO at 77K

# HTS MICROWAVE PASSIVE DEVICES

## ★ Low Loss Long Transmission Lines

- Long Delay Lines
- Delay Line Filters
- Phase Shifters
- Interconnections

## ★ High Q components

- Resonators
- Filters
- Filter banks

## ★ Antenna Systems

- Small Antennas
- Superdirectional Antenna Arrays
- Low Loss Feed Networks
- Matching Networks

★ Any component where ultra low loss is required

# HTS MICROWAVE SYSTEMS AND APPLICATIONS

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## *Some Examples*

### ★ Low Loss Long Transmission Lines

Pulse Compression Radar

Spectrum Analysers

Instantaneous Frequency Measurement Systems

Antenna Beam Forming Networks

### ★ High Q components

Low Noise Oscillators - Doppler Radar

Frequency References

Mobile Communication Base Station Filters

Channelised Receivers

### ★ Antenna Systems

Direction Finding

Miniature Antennas for Satellite and Airborne Systems

Mobile Radio Beam Scanning Arrays