

# Extending The Unambiguous Range Of Cw Polyphase Radar Systems Using Number Theoretic Transforms

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### [Extending The Unambiguous Range Of](#)

#### **Extending the unambiguous range of two-color interferometers**

Extending the unambiguous range of two-color interferometers Peter J de Groot The unambiguous distance measurement range in two-color interferometry is generally understood to be

#### **Extending the unambiguous range of CW polyphase radar ...**

parabolic distribution The radar system's unambiguous target detection range is limited by the number of subcodes within the code period (code length) Increasing the code length to extend the unambiguous range results in a larger range-Doppler correlation matrix processor in the receiver, a longer compression time and an increase in the

#### **Novel range-Doppler processing and waveform design ...**

Novel range-Doppler processing and waveform design method for extending unambiguous Doppler Yinsheng Wei\*□Zhineng Mao Department of Electronic Engineering Harbin Institute of Technology Harbin, China \*E-mail: hitweiygroup@163com Abstract—Coherent pulse train can obtain

high Doppler resolution, but leads to range and Doppler ambiguity

### **Simply Extending the Mass Range in Electron Transfer ...**

Simply Extending the Mass Range in Electron Transfer Higher this case, the extended range enabled unambiguous annotation of the glycan composition, as evidenced by the c4 and c5 fragment ions, which differ by an asparagine with a full glycan attached This is further supported by a signature ion

### **RANGE EXTENSION OF DOPPLER RADAR BY COMBINED USE ...**

RANGE EXTENSION OF DOPPLER RADAR BY COMBINED USE OF LOW-PRF AND PHASE DIVERSITY PROCESSED observation range and unambiguous velocity limit were 250 km and 53 m/s, respectively The processing time alternating-PRF method for extending the range of unambiguous Doppler velocity Preprints, 22nd Conf Radar Meteor, AMS, 523-527

### **Dwell Time Minimization for Unambiguous Radar Range and ...**

ing radar range and velocity measurements can be recast in the context of radar resource management as being a problem about achieving some desired unambiguous range and velocity while using a minimal amount of time This paper develops a method for unambiguous range and velocity extension that combines features of traditional multiple-pulse-

### **Radar Space-Time Processing for Range-Folded Spread ...**

of unambiguous range Obscuration due to ambiguous range foldover from distant clutter echos seriously degrades target detectability For the case of skywave HF over-the-horizon (OTH) radar, ionospheric motion causes spreading of surface clutter in Doppler space and coupled with range folded clutter, introduces the effect of

### **Frequency Range Extension of Spectrum Analyzers with ...**

Frequency Range Extension of Spectrum Analyzers 1EF43\_0E 5 Rohde & Schwarz Harmonic Mixing In harmonic mixers, a harmonic of the local oscillator (LO) is used for signal conversion to a lower intermediate frequency (IF) The advantage of this method is that the frequency range of the local oscillator may be much

### **Analysis and Correction of Dual PRF Velocity Data**

mines the unambiguous range of the radar The unambiguous velocity and range of a Doppler radar are coupled, and a trade-off has to be made The product of the unambiguous velocity and range is given by (Doviak and Zrnic' 1993)  $cR_{unamb} = 2v_{unamb} R_{unamb}$ , (2) where  $c$  is the speed of light For a typical C-band (1.53 cm) radar, this product is roughly

### **Multiple Frequency Range Imaging to Remove Measurement ...**

MULTIPLE FREQUENCY RANGE IMAGING TO REMOVE MEASUREMENT AMBIGUITY corresponds to a 5m unambiguous range, whereas a modulation frequency of 10MHz will provide 15m An appropriate frequency can therefore be selected to encompass all object significantly extending the working range of the system An advantage of this technique is

### **Two-dimensional signal processing in FMCW radars**

Two-dimensional signal processing in FMCW radars The use of an FMCW radar for range and velocity measurement is outlined in the paper An FMCW radar emits a continuous wave, frequency modulated by a sawtooth function Object range information is deduced from the EXTENDING THE UNAMBIGUOUS VELOCITY MEASUREMENT RANGE

### **Experimental Evaluation of SZ(8/64) Phase Coding with ...**

Experimental Evaluation of SZ(8/64) Phase Coding with Censoring for Range-Velocity Ambiguity Mitigation JC Hubbert\*, S Ellis, M Dixon, and G Meymaris National Center for Atmospheric Research, Boulder CO, 80307 USA Abstract: The Doppler Dilemma or range-velocity folding of echoes from uniformly spaced transmit pulse trains

### **Signal Design and Processing Techniques for WSR-88D ...**

Signal Design and Processing Techniques for WSR-88D Ambiguity Resolution Staggered PRT Updates extending the radar coverage (Sirmans 1976) Since then, the practical aspect of The second issue was mitigated by ensuring the unambiguous range of the shortest PRT

### **Novel waveform for magnetron radar - TAU**

periodic code, can extend the unambiguous range considerably beyond what the original PRF determines In the receiver the envelope-detected return-pulses are correlated with a corresponding mismatched bipolar pulse-train In addition to extending the unambiguous range, this detection concept performs Marcum's alternative integration scheme of

### **Weather Radar Range Velocity Ambiguity Analysis Using ...**

unambiguous velocity becomes  $v_a = \lambda/[4(T_2 - T_1)]$  In addition, the unambiguous range is  $r_a = cT_1/2$ , corresponding to the shorter PRT This implies that the staggered PRT is equivalent to a uniform PRT of  $T_2 - T_1$  for the unambiguous velocity and a uniform PRT of  $T_1$  for the unambiguous range, and each can be independently selected

### **DOPPLER WEATHER RADAR PART AIR FORCE \*IIIIuuIIuuuuu**

techniques for extending radar's maximum unambiguous range and velocity and thereby minimizing the effect of these ambiguities Many factors may favor one approach over another for a given application, but from an overall radar system performance standpoint, probably no ...

### **Chapter 6 Extending the Bandwidth of SFLs**

tion (516), and the unambiguous range of the distance measurement is governed by the coherence length of the laser Optical ranging applications therefore benefit from rapidly tunable, wide-bandwidth, and narrow-linewidth swept-frequency optical sources Rapidly swept laser sources with wide tuning ranges of ~10-20 THz also

### **Performance Limits for Exo-Clutter Ground Moving Target ...**

range limit due to SNR will not be exceeded with endo-clutter processing Target Trackers A particularly powerful marriage is the output of a GMTI radar (its detection reports with mensuration) with a target tracker A tracker's job is to ascertain a target's trajectory, both in a forensic and in a predictive sense

### **Inter-Pulse Coding and Coherent-on-Receive Modifications ...**

- Periodic pulse position coding is effective in extending the unambiguous range • This allows operating at all ranges in a "short pulse high PRF" mode
- The penalty of delay response "hole" at the PRI can be mitigated by switching