# INDEX TO LECTURE NOTES

(ver4.7)


Active array III-79, III-54
Airborne MTI II-47
Adaptive antenna IV-142
Albershiem's formula I-97
Altitude return II-55
Ambiguity function III-12
Amplifier III-124
AN/APS-31 IV-18
AN/APS-200 II-64
Angel echoes IV-94, IV-97
Angular accuracy III-23
AN/PPS-6 IV-16
AN/SPS-40 IV-20
AN/SPS-64 IV-12
AN/TPQ-37 IV-2
AN/SPS-67 IV-14
Antenna arrays III-53
Antenna as radar target I-114
Antenna far field III-41
Antenna gain I-21, III-44
Antenna imperfections III-105
Antenna pattern control III-65
Antenna polarization I-22, III-46
Antenna radomes III-102
Antennas III-38
Antenna scanning modulation II-93, II-106
Antenna temperature II-8, III-74
Aperture antenna III-51
Aperture efficiency III-67
Apparent Range II-43
Array factor III-54
Attenuation constant I-13
Average power I-106
B-2 I-139
Barker sequences III-35
Bandlimited signal I-88
Beam solid angle III-43
Beamshape loss II-5
Beam coupling loss III-78
Beamwidth limited II-50
Beat frequency II-30
Bistatic radar I-29, IV-111
Blind speeds II-67
Boltzman's constant I-54
Bragg scatter IV-97
Butler matrix III-57
Burnthrough range I-63
Carrier modulation I-79
Chaff IV-106
Chirp III-25
Chirp complications III-33
Circulators II-4, III-115
Clutter I-47
Clutter area II-50
Clutter attenuation II-68
Clutter improvement factor II-68
Clutter reflection II-53
Clutter return II-48
Clutter spectrum II-56
Coherent pulse train II-80, II-97
Coherent sidelobe canceler (CSLC) IV-139
Collapsing loss II-6
Complex signals III-11
Conical scan antenna II-104, IV-136
Coordinate systems I-41
Corner reflector I-131
Cosecant-squared pattern III-68
Cross eye jamming IV-134
Cross range IV-31
Continuous wave (CW) radar problem II-27
dBZ IV-93
Decibel (dB) I-53
dBsm I-108
Delay Line canceler II-39
Diffuse scatterning II-53
Digital pulse compression III-34
Digital beamforming III-97
Directive gain III-43
Discrete Fourier transform II-86
Doppler filtering using DFT II-83
Doppler frequency shift II-19
Down range IV-31
Duplexer III-114
Dwell time I-103
Eclipsing II-40
Effective temperature II-7, I-59
Electromagnetic waves I-6
Electromagnetic spectrum I-24
Element factor III-54
Equivalent earth radius II-125
F-117 I-138
False alarm I-92
Filters I-57, I-86, III-117
Fluctuating targets I-123
FMCW II-30
FMCW complications II-34
FMCW range determination II-32
Fourier transform I-74

Frame area II-101
Free electron laser III-139
Frequency bands I-25, I-16
Fresnel (specular) reflection I-15
Gain control II-107
Gaussian PDF I-66
Gaussian beam II-5, II-51, II-107
Gaussian noise (white noise) I-81
Glint II-114
Grating lobe III-56
Ground penetrating radar IV-151
Ground plane image III-60
Harmonic radar IV-28
Heterodyning/Homodyning III-1, II-21
HF radars IV-53
Height gain curve II-123
High PRF II-46, II-59
Hitchhiker radar IV-112
I and Q representation II-25, II-74
Imaging of moving targets IV-67
Integration efficiency/improvement I-99, I-104
Intermodulation products III-120
Inverse SAR (ISAR) IV-49
Isotropic surface II-54
Jammer I-62, II-14, IV-134
Klystron III-132
Lambertian II-53
Laser radar IV-143
Linear system I-85
Loss due to absorption II-3
Loss due to rain II-3
Loss from mixer conversion II-11
Low angle tracking II-117
Low noise amplifier (LNA) II-124
Low PRF II-46, II-59
Low/Ultra-low sidelobes III-64
LPI radar III-63
Magic Tee III-116
Magnetron III-134
Mainbeam clutter II-56
Mapping IV-44
Matched filters III-4
Matched filter max SNR out III-7
Maximum detection range I-38
Method of images III-60
Mixers III-118
MMIC IV-99
Modulation (mixing) I-79
Monopulse antenna III-99
Monopulse tracking II-110
Monopulse tracking errors II-115
MTI improvement factors II-91
MTI limitations II-92
MTI Radar II-36
Multiple beam antennas III-75
Multipath II-117
Multiplexer III-112
Noise bandwidth I-58
Noise figure I-65, II-7
Noise power spectral density III-34
Noncoherent pulse train II-98
Nutating feed II-105
Nyquist sampling rate II-83
OTH radar parameters IV-53
Parabolic antenna III-47
Path gain factor II-118
Patriot radar IV-7
PDF I-66
Phase shifter III-89
Plane wave I-8, I-12
Photonics III-95
Police radar I-60
Power density I-12, I-35
Power sources III-128
PPI I-42, IV-22
PRF I-43, II-46
Probability of detection I-55, I-95
Probability of false alarm I-55, I-93
Propagation mechanisms I-49
Pulse burst mode II-90
Pulse compression III-24
Pulse Doppler Radar II-36
Pulse train I-43, I-82, II-80
Pulse width limited II-49

Quantization errors II-92, III-90
Radar block diagram I-39
Radar classifications I-32
Radar displays I-42, IV-22
Radar functions I-31
Radar horizon II-126
Radar range equation (RRE) I-34
Radar tracking II-104
Radiation by line source III-51
Radiation intensity III-43
Radiometers IV-23
Radome III-102, III-105
Range accuracy III-17
Range ambiguity I-44, II-41
Range gate I-45, II-89
Range resolution I-46, III-30, IV-31
Rayleigh distribution I-70
RCS I-108
RCS of cylinder I-110
RCS of sphere I-111
RCS reduction methods I-130
Receiver types III-1
Reflection coefficient I-15
Refraction I-15, II-124
Resonance IV-79, IV-107
Rician distribution I-91
Rotary joint III-113
RRE I-29, I-34
RRE for fluctuating targets I-127
RRE for pulse integration I-105
RRE SAR IV-46
Sampling theorem I-81
SAR IV-31
SAR image resolution IV-35, IV-44
SAR, focused IV-38
SAR, motion compensation IV-43
SAR, speckle IV-47
SAR, unfocused IV-36
Scattering matrix I-112
Scattering mechanisms I-115
SCR-270 radar IV-9
Sea shadow I-140
Sea states and clutter II-62
Search detection range II-103
Search radar equation II-100
Search volume II-101
Sequential lobing II-104
Shaping I-133
Sidelobe clutter II-57
Signal-to-jam ratio (SJR) I-64
Signal-to-clutter ratio (SCR) II-52
Signal-to-noise ratio (SNR) I-59
Slotted waveguide III-62
SNR using integration I-106
Solid angles III-40, III-43
Spherical wave I-7, I-12
Spillover efficiency III-49
SPY-1 radar IV-11
Staggered PRFs II-42, II-71
Standard temperature I-54
Stepped frequency radar IV-61
Surface clutter II-48
Surface current I-140
Swerling types I-123
Switch (duplexer) III-114
Synchronous detection II-74, II-78
Synchronous receiver II-77
System temperature I-59
Tapered aperture distributions III-66
Tapped delay line III-9
Target reflectivity IV-7, IV-88
Thermal Noise I-54
Threshold detection I-38, I-55
Time delay ranging I-30
Time on target I-103, II-102
Tracking II-104
Transformation of variables I-73
Transmission lines II-4, III-109
Transmit/receive module (T/R) III-88
Transmitter characteristics III-130
True time delay scanning III-92
Transmitter characteristics III-129
True Time delay scanning III-91
Two-way beamwidth II-51
Ultra-wideband radar IV-71
Ultrasonic radar IV-85
Unambiguous range I-44, II-42
Uncertainty relation III-22
Velocity accuracy III-21
Velocity ambiguity II-45
Waveform parameters III-141
Weather radar IV-87
Wind shear IV-92