



- EO ❌
- AEO ❌
- RF ✅
- GNSS ❌

SE-RAY-NBSAR



- RAY ✅

ADVANCED NARROW BEAM SAR SIMULATION TOOL COMPUTES REALISTIC NARROW BEAM SAR IMAGES

- FAST ❌

SE-RAY-NBSAR takes advantage of the recent improvements in the field of 3D graphics to compute very efficiently a Radar Image of a scene containing a very complex target (up to 100 GHz)

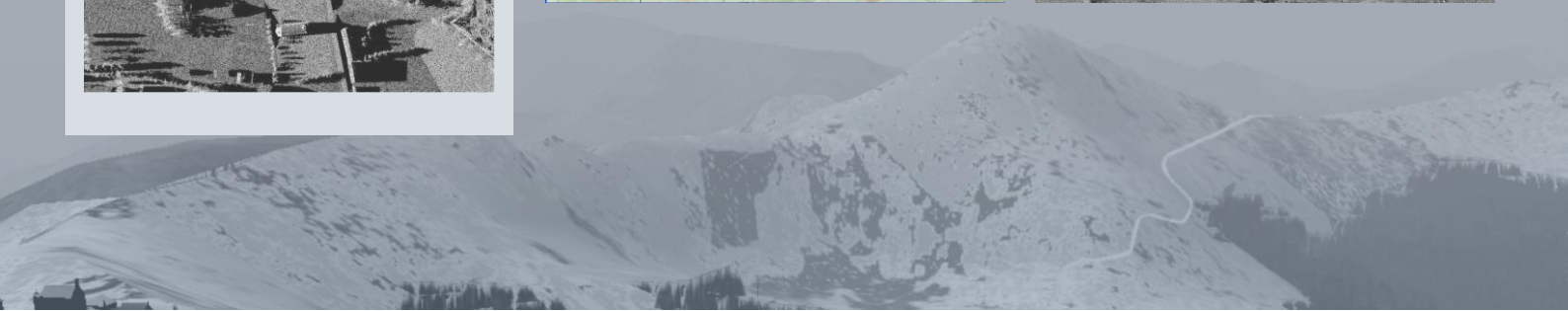
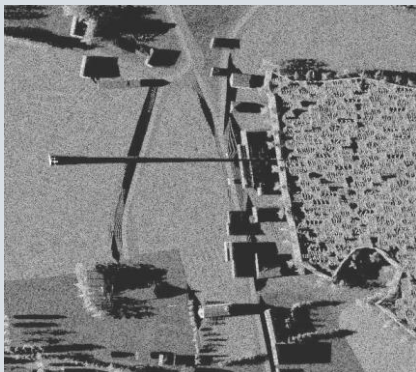
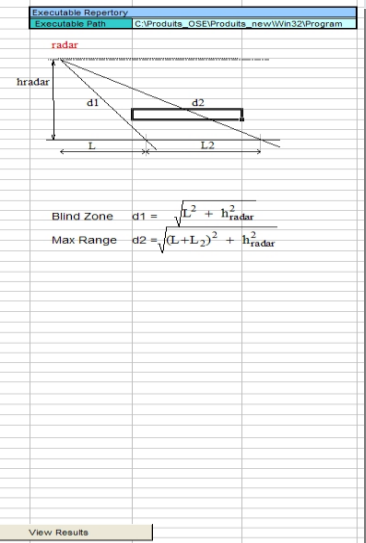
Features

- RF models validated by ONERA in France, FOI in Sweden and Fraunhofer FHR in Germany
- Very efficient computation kernel, for very detailed objects
- Can compute objects coated with dielectric layers including diffraction by edges
- Can deal with almost all popular CAD formats thanks to its associated 3ds Max® and Sketchup® plug-ins
- Easy-to-use product thanks to its dedicated GUI

Key Advantages

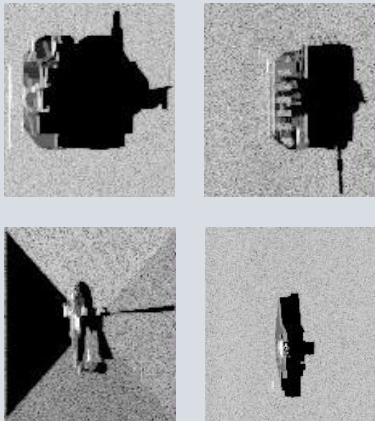
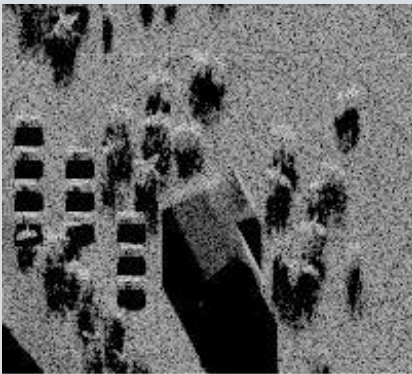
- Complex 3D target management
- Robust electromagnetic models
- Dedicated user friendly GUI
- NBSAR images can also be computed on large 3D database

Source parameters	
Frequency	9,9 GHz
Source polarization	Theta(V) <input checked="" type="radio"/> Phi(H) <input type="radio"/>
SAR Parameters	
Radar height	1000,0000m
Near distance	2045,0000m
Swath width	48,0000m
Range gate size	0,1000m
Cross range resolution	0,1000m
Length of trajectory	68,0000m
Antialiasing parameters	
Primary grid resolution	0,1000m
Antialiasing level	4
Antialiased grid resolution	6,25E-03m
Normal angle vector	10,0°
Amount of contributors per range gate	8
SAR Scenario	
Ground	terrain2.bdd
Object	Tanker.bdd
Object Orientation	90,0°
Optical Path	
Speckle	<input checked="" type="checkbox"/> Enable SP
Number of GO reflections before SP	0
Physical Optics	<input checked="" type="checkbox"/> Enable PO
Number of GO reflections before PO	0
Physical Theory of Diffraction	<input type="checkbox"/> Enable PTD
Number of GO reflections before PTD	0
Data Path	
Input object data path	C:\SE-RAY-EMTestCases\FGAN_Anke
Output relative path	Res
Output base filename	SAR
SAR image parameters	
SAR Result Name	SAR_image
Receiver polarization	Theta(V) <input checked="" type="radio"/> Phi(H) <input type="radio"/>
Launch Computation	Generate SAR
View Results	



Benefits

- An efficient tool for target radar signature analysis
- NBSAR images of 3D targets can be computed in few seconds

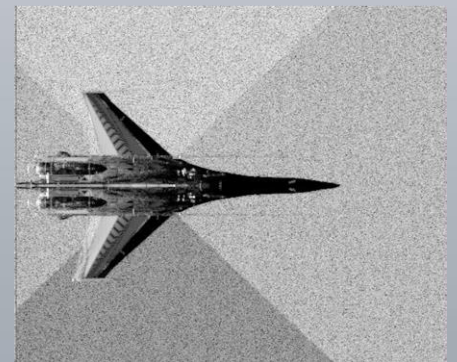
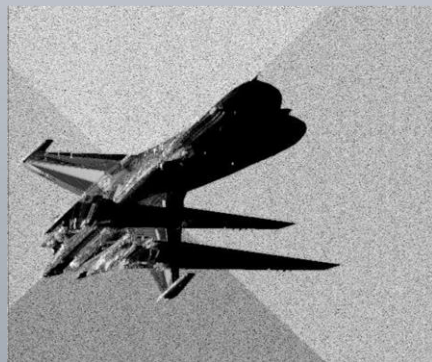
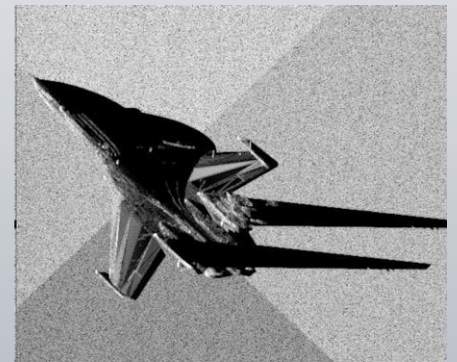
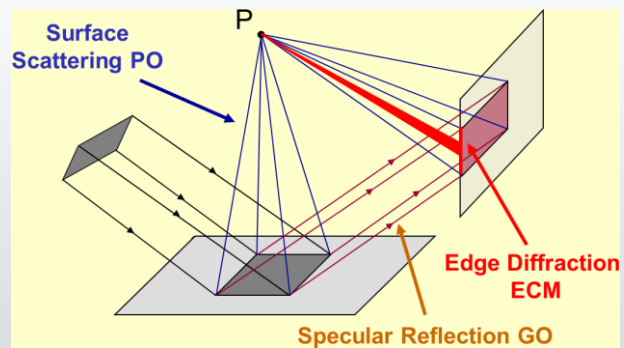


System requirements



Physical model features

- Association of shooting and bouncing ray technique (ray tracing) & electromagnetic asymptotic formulations
- Scattering computation using Physical Optics
- Multiple reflections computation using Geometrical Optics
- Edge diffraction computation using the Equivalent Current Method of Michiell extended to targets covered by dielectric materials
- Reflection and scattering on multilayer dielectric materials
- Model dedicated to clutter materials including speckle effects



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