Asteroid Imaging

Detchai Pock Ittharat* and Paul Sava

Center for Wave Phenomena
Colorado School of Mines
Single-orbiter $\rightarrow$ zero-offset
Single-orbiter $\rightarrow$ zero-offset
Single-orbiter $\rightarrow$ zero-offset
Dual-orbiter → multi-offset
1.9 km

Rx

2.5 km

Tx

Dual-orbiter → multi-offset
Dual-orbiter $\rightarrow$ multi-offset
Wave equation

\[ \nabla^2 E = \mu \sigma \frac{\partial E}{\partial t} + \mu \epsilon \frac{\partial^2 E}{\partial t^2} \]

\( \mu \): magnetic permeability(H/m)

\( \epsilon \): electric permittivity(F/m)

\( \sigma \): conductivity(S/m)
Zero-offset migration
1 Shot-record migration
Smooth velocity model
Zero-offset migration
Shot-record migration
Future Work

evaluate the model by wavefield tomography
Future Work

evaluate the model by wavefield tomography
consider 3D navigation and imaging
Future Work

evaluate the model by wavefield tomography
consider 3D navigation and imaging
account for the asteroid irregular spin
Acknowledgments

Center of Wave Phenomena

Southwest Research Institute®