

Summary of Possible Projects for 2009

2D Inverse Simulator of Sonic Logging Measurements .

D. Pardo, M. Paszynski, C. Torres-Verdin, L. Demkowicz ,

The simulator will allow to simulate accurately 2D inverse sonic problems. The simulator shall utilize a 2D parallel two-grid solver extended for coupled problems, with an special preconditioning of the multi-grid strategy and with a 2D parallel direct solver based on the nested dissection scheme.

2009-2010. Status: 0% completed

Possible Sponsors: Joint Industry Consortium on Formation Evaluation (C. Torres-Verdin), Basque Center for Applied Mathematics (BCAM).

2D Inverse Simulator of Electromagnetic Coupled with Acoustic Problems .

D. Pardo, C. Torres-Verdin, L. Demkowicz ,

The simulator will allow us to obtain the solution of one inverse problem for different physical phenomena (as opposed to one inverse problem per physical phenomena) in an efficient way. This will increase the accuracy of results, by reducing the non-uniqueness of the inverse problem as well as the uncertainty on the logging data.

2009-2010. Status: 0% completed

Possible Sponsors: Joint Industry Consortium on Formation Evaluation (C. Torres-Verdin), Basque Center for Applied Mathematics (BCAM).

Development of a New Finite Element Simulator of 1D and 2D Multi-Physic Inverse Logging Problems .

D. Pardo, P. Matuszyk, C. Torres-Verdin ,

The simulator will enable the joint-inversion of electromagnetic, sonic, and fluid-flow measurements for the assesment and monitoring of hydrocarbon bearing formations.

2009-2010. Status: 25% completed

Confirmed Sponsors: Joint Industry Consortium on Formation Evaluation (C. Torres-Verdin), Basque Center for Applied Mathematics (BCAM).

2D Inverse Simulator of Resistivity Logging Measurements .

D. Pardo, C. Torres-Verdin ,

The simulator will enable simulations of 2D resistivity logging inverse problems in reasonable CPU times. The simulator incorporates a 2D parallel two-grid solver for Maxwell equations, with a nested-dissection parallel direct solver working on the coarse-grid level, dealing effectively with multiple right-hand sides. It shall be compatible with data obtained from a variety of logging instruments operating at any frequency, including laterolog/normal instruments, and induction instruments.

2008-2009. Status: 40% completed

Confirmed Sponsors: Joint Industry Consortium on Formation Evaluation (C. Torres-Verdin), Basque Center for Applied Mathematics (BCAM).