



(11)

EP 2 815 257 B8

(12) **CORRECTED EUROPEAN PATENT SPECIFICATION**

(15) Correction information:
Corrected version no 1 (W1 B1)
Corrections, see
Bibliography INID code(s) 73

(51) Int Cl.:
G01V 99/00 (2009.01)

(86) International application number:
PCT/US2013/026019

(48) Corrigendum issued on:
22.11.2017 Bulletin 2017/47

(87) International publication number:
WO 2013/123108 (22.08.2013 Gazette 2013/34)

(45) Date of publication and mention
of the grant of the patent:
02.08.2017 Bulletin 2017/31

(21) Application number: **13707953.9**

(22) Date of filing: **14.02.2013**

(54) **GIGA-CELL LINEAR SOLVER METHOD AND APPARATUS FOR MASSIVE PARALLEL RESERVOIR SIMULATION**

LINEARES GIGAZELLEN-LÖSUNGSVERFAHREN UND VORRICHTUNG FÜR MASSIVE PARALLELE RESERVOIRSIMULATION

PROCÉDÉ DE RÉOLUTION LINÉAIRE DE GIGACELLULE ET APPAREIL POUR LA SIMULATION PARALLÈLE MASSIVE DE RÉSERVOIR

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

US-A1- 2011 098 998

(30) Priority: **14.02.2012 US 201261598633 P**

- DOGRU A ET AL: "A Next-Generation Parallel Reservoir Simulator for Giant Reservoirs", 2008 SPERESERVOIR SIMULATION SYMPOSIUM,, no. SPE 119272, 2 February 2009 (2009-02-02), pages 1-29, XP007920456,
- FUNG L S K ET AL: "EFFICIENT MULTILEVEL METHOD FOR LOCAL GRID REFINEMENT FOR MASSIVELY PARALLEL RESERVOIR SIMULATION", PROCEEDINGS OF THE EUROPEAN CONFERENCE OF MATHEMATICS OF OILRECOVERY, XX, XX, no. M-28, 1 January 2000 (2000-01-01), XP008058994,
- GIRAUD L ET AL: "Parallel scalability study of hybrid preconditioners in three dimensions", PARALLEL COMPUTING, ELSEVIER PUBLISHERS, AMSTERDAM, NL, vol. 34, no. 6-8, 1 July 2008 (2008-07-01), pages 363-379, XP022695188, ISSN: 0167-8191, DOI: 10.1016/J.PARCO.2008.01.006 [retrieved on 2008-02-08]

(43) Date of publication of application:
24.12.2014 Bulletin 2014/52

(73) Proprietor: **Saudi Arabian Oil Company**
31311 Dhahran (SA)

(72) Inventor: **FUNG, Larry, S.**
Dhahran 31311 (SA)

(74) Representative: **Robinson, David Edward**
Ashdown
Marks & Clerk LLP
1 New York Street
Manchester M1 4HD (GB)

(56) References cited:
WO-A1-2012/015500 US-A1- 2006 265 204

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 2 815 257 B8

- | | |
|--|---|
| <ul style="list-style-type: none">• JOSHUA A WHITE ET AL: "Block-preconditioned Newtonâ Krylov solvers for fully coupled flow and geomechanics", COMPUTATIONAL GEOSCIENCES, KLUWER ACADEMIC PUBLISHERS, DO, vol. 15, no. 4, 12 April 2011 (2011-04-12) , pages 647-659, XP019956505, ISSN: 1573-1499, DOI: 10.1007/S10596-011-9233-7 | <ul style="list-style-type: none">• LARRY S K FUNG AND ALI H DOGRU: "Distributed Unstructured Grid Infrastructure for Complex Reservoir Simulation", 2008 SPE EUROPEC/EAGE ANNUAL CONFERENCE AND EXHIBITION,, no. SPE 113906, 9 June 2008 (2008-06-09), pages 1-9, XP007920454, |
|--|---|