



- (51) **International Patent Classification:**
G01R 33/483 (2006.01) *G01R 33/561* (2006.01)
- (21) **International Application Number:**
PCT/IN2012/000127
- (22) **International Filing Date:**
23 February 2012 (23.02.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
2547/MUM/2011 9 September 2011 (09.09.2011) IN
- (72) **Inventor; and**
- (71) **Applicant :** ARUNACHALAM, Arjun [IN/IN]; A-18, Garden Estate, Nagras Road, Aundh, Pune 411 007, Maharashtra (IN).
- (74) **Agent:** GHARVE, Shilpa; Lega Solv, C-302, RNA Re-gency Park, M.G. Road, Kandivali (W), Mumbai 400 067, Maharashtra (IN).
- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,

MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *with amended claims and statement (Art. 19(1))*

(88) Date of publication of the international search report:

10 January 2013

Date of publication of the amended claims and statement: 18 April 2013

(15) Information about Correction:

[Continued on next page]

(54) **Title:** A METHOD AND SYSTEM FOR RAPID MRI ACQUISITION USING TAILORED SIGNAL EXCITATION MODULES (*RATE*)

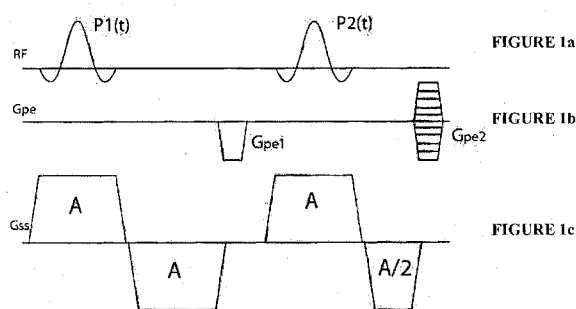


FIGURE 1

(57) **Abstract:** A system and method for rapid acquisition of MRI data at multiple points in time in an MRI scan using tailored excitation modules, said method comprising the steps of: obtaining tailored signal excitation modules by using RF excitation pulses in combination with one or more magnetic field gradients; acquiring an aliased k-space dataset at a point in time using a pulse sequence that employs said obtained tailored signal excitation modules, which tag and overlap distinct k-space points; repeating steps (a) and (b) for acquiring aliased k-space datasets at multiple time points in a scan while tagging the overlapped, k-space points as a function of time to obtain an accelerated k-t dataset; undoing k-space aliasing in the acquired k-space datasets by Fourier transforming them along the time axis followed by a filtering process to separate the overlapped points; and performing a Fourier transformation along one or more axes, of the un-aliased k-space datasets to generate image frames for the different time points at which data was acquired.

Previous Correction:

see Notice of 18 October 2012