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CMP 2006: 6

JFE

(I) 65M06

35G05

Shirobokov, N. V. (RS-SUR; Chelyabinsk)

Splitting of evolution equations in a three-dimensional space on the basis of diagonal-implicit methods. (Russian. English and Russian summaries)

Izv. Chelyabinsk. Nauchn. Tsentra 2004, no. 1(22), 1-6 (electronic).

Reviewer: Moshkin, Nikolay P. 022914 (Nakhon Ratchasima)

65M20

16J20

MAR 29 2006

16 June 2006

REVIEWER: Please give 5-character classification(s) according to the 2000 Mathematics Subject Classification (MSC2000). (See www.ams.org/msc/)

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Nikolay

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This is a review text file submitted electronically to MR.

Reviewer: Moshkin, Nikolay, P.

Reviewer number: 022914

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111 University Ave., Institute of Science, Suranaree University of Technology, Nakhon Ratchasima, 30000, Thailand
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Author: Shirobokov, N. V.

Short title: Splitting of evolution equations in a three-dimensional space on the basis of diagonal-implicit methods.

MR Number: 2191835

Primary classification: 65L06

Secondary classification(s): 65M06

Review text:

Splitting methods for the time integration of three-dimensional evolution equation is constructed. By the Method of Lines approach, equation is converted into the semi-discrete initial value problem. To construct method of the third order of approximation in the time the idea of the three-stage diagonally implicit Runge-Kutta method is utilized. The free coefficients of the method are chosen from the requirement of the minimization of functional which related with function of stability. The resulting methods have been applied to test problems with known solution. The numerical results are compared with results by methods of predictor corrector and method of stabilization.

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CMP 2006 : 11

(I) 65N

35J25

94A

Boltnev, A. A.

Kalitkin, N. N.

Kacher, O. A. (RS-AOS-MD; Moscow)

Logarithmically convergent relaxation computation. (Russian)

Dokl. Akad. Nauk **404** (2005), no. 2, 177–180.

Reviewer: *Moshkin, Nikolay P.*

022914 (Nakhon Ratchasima)

JUN 23 2006

15 AUG 2006

REVIEWER: Please give 5-character classification(s) according to the 2000 Mathematics Subject Classification (MSC2000). (See www.ams.org/msc/)

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CMP 2007 : 3

(I) 65M06

Aksenova, E. I.

An efficient three-layer scheme for a parabolic equation in cylindrical coordinates in a domain with a small hole. (Russian. Russian summary)

Zh. Vychisl. Mat. Mat. Fiz. **46** (2006), no. 3, 445–456.

Reviewer: *Moshkin, Nikolay P.*
022914 (Nakhon Ratchasima)

JAN 31 2007

REVIEWER: Please give 5-character classification(s) according to the 2000 Mathematics Subject Classification (MSC2000). (See www.ams.org/msc/)

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Reviewer: Moshkin, Nikolay

Reviewer number: 022914

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30000, Thailand
moshkin@math.sut.ac.th

Author: Aksenova, E. I.

Short title: An efficient three-layer scheme for a parabolic equation in cylindrical coordinates in a domain with a small hole.

MR Number: 2260301

Primary classification: 65M06

Secondary classification(s): 65M12

Review text:

An efficient three-level scheme for parabolic equations in cylindrical coordinates is constructed in a region with a small hole. No axial symmetry is assumed. The convergence rate of the scheme is estimated under minimum requirements on the initial data. The estimates are uniform with respect to a small parameter—the inner diameter of the region. The order of convergence is $\tau + h^2$, $\tau^{1/2} + h$, $\tau + h$, depending on the smoothness of the data.