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Authors	Arellano Ferro, A., Bramich, D. M., Figuera Jaimes, R., Giridhar, Sunetra, Kains, N., Kuppuswamy, K., Jørgensen, U. G., Alsubai, K. A., Andersen, J. M., Bozza, V., Browne, P., Calchi Novati, S., Damerджи, Y., Diehl, C., Dominik, M., Dreizler, S., Elyiv, A., Giannini, E., Harpsøe, K., Hessman, F. V., Hinse, T. C., Hundertmark, M., Juncher, D., Kerins, E., Korhonen, H., Liebig, C., Mancini, L., Mathiasen, M., Penny, M. T., Rabus, M., Rahvar, S., RICCI, DAVIDE, Scarpetta, G., Skottfelt, J., Snodgrass, C., Southworth, J., Surdej, J., Tregloan-Reed, J., Vilela, C., Wertz, O., Mindstep Consortium
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Erratum: A detailed census of variable stars in the globular cluster NGC 6333 (M9) from CCD differential photometry

by A. Arellano Ferro,^{1★} D. M. Bramich,² R. Figuera Jaimes,^{2,3} Sunetra Giridhar,⁴ N. Kains,² K. Kuppaswamy,⁴ U. G. Jørgensen,^{5,6} K. A. Alsubai,⁷ J. M. Andersen,^{8,6} V. Bozza,^{9,10} P. Browne,³ S. Calchi Novati,^{9,11} Y. Damerdj, ¹² C. Diehl,^{13,14} M. Dominik,³ S. Dreizler,¹⁵ A. Elyiv,^{12,16} E. Giannini,¹³ K. Harpsøe,^{5,6} F.V. Hessman,¹⁵ T.C. Hinse,^{17,5} M. Hundertmark,³ D. Juncher,^{5,6} E. Kerins,¹⁸ H. Korhonen,^{5,6} C. Liebig,³ L. Mancini,¹⁹ M. Mathiasen,⁵ M.T. Penny,²⁰ M. Rabus,²¹ S. Rahvar,^{22,23} D. Ricci,^{12,24} G. Scarpetta,^{9,25} J. Skottfelt,^{5,6} C. Snodgrass,²⁶ J. Southworth,²⁷ J. Surdej,¹² J. Tregloan-Reed,²⁷ C. Vilela,²⁷ O. Wertz¹² and (The MiNDSTeP consortium)

¹Instituto de Astronomía, Universidad Nacional Autónoma de México. Ciudad Universitaria CP 04510, Mexico

²European Southern Observatory, Karl-Schwarzschild-Straße 2, D-85748 Garching bei München, Germany

³SUPA, School of Physics and Astronomy, University of St Andrews, North Haugh, St Andrews KY16 9SS, UK

⁴Indian Institute of Astrophysics, Koramangala 560034, Bangalore, India

⁵Niels Bohr Institute, University of Copenhagen, Juliane Maries vej 30, DK-2100 Copenhagen, Denmark

⁶Centre for Star and Planet Formation, Geological Museum, Øster Voldgade 5, DK-1350 Copenhagen, Denmark

⁷Qatar Environment and Energy Research Institute (QEERI), HBKU, Qatar Foundation, Doha

⁸Department of Astronomy, Boston University, 725 Commonwealth Ave, Boston, MA 02215, USA

⁹Dipartimento di Fisica ‘E.R. Caianiello’, Università di Salerno, Via Ponte Don Melillo, I-84084 Fisciano, Italy

¹⁰Istituto Nazionale di Fisica Nucleare, Sezione di Napoli, Italy

¹¹Istituto Nazionale per gli Alti Studi Scientifici (IIASS), Vietri Sul Mare (SA), Italy

¹²Institut d’Astrophysique et de Géophysique, Université de Liège, Allée du 6 Août 17, Sart Tilman, Bât. B5c, B-4000 Liège, Belgium

¹³Astronomisches Rechen-Institut, Zentrum für Astronomie der Universität Heidelberg (ZAH), Mönchhofstr. 12-14, D-69120 Heidelberg, Germany

¹⁴Hamburger Sternwarte, Universität Hamburg, Gojenbergsweg 112, D-21029 Hamburg, Germany

¹⁵Institut für Astrophysik, Georg-August-Universität, Friedrich-Hund-Platz 1, D-7077 Göttingen, Germany

¹⁶Main Astronomical Observatory, Academy of Sciences of Ukraine, vul. Akademika Zabolotnoho 27, 03680 Kyiv, Ukraine

¹⁷Korea Astronomy and Space Science Institute, Daejeon 305-348, Korea

¹⁸Jodrell Bank Centre for Astrophysics, University of Manchester, Oxford Road, Manchester M13 9PL, UK

¹⁹Max Planck Institute for Astronomy, Königstuhl 17, D-69117 Heidelberg, Germany

²⁰Department of Astronomy, Ohio State University, 140 West 18th Avenue, Columbus, OH 43210, USA

²¹Departamento de Astronomía y Astrofísica, Pontificia Universidad Católica de Chile, Av. Vicuña Mackenna 4860, 7820436 Macul, Santiago, Chile

²²Department of Physics, Sharif University of Technology, PO Box 11155–9161, Tehran, Iran

²³Perimeter Institute for Theoretical Physics, 31 Caroline St N., Waterloo, ON N2L 2Y5, Canada

²⁴Instituto de Astronomía – UNAM, Km 103 Carretera Tijuana Ensenada, 422860 Ensenada (Baja Cfa), Mexico

²⁵INFN, Gruppo Collegato di Salerno, Sezione di Napoli, Italy

²⁶Max Planck Institute for Solar System Research, Max-Planck-Str. 2, D-37191 Katlenburg-Lindau, Germany

²⁷Astrophysics Group, Keele University, Staffordshire ST5 5BG, UK

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The paper ‘A detailed census of variable stars in the globular cluster NGC 6333 (M9) from CCD differential photometry’ was published in MNRAS, 434, 1220 (2013). Equation (7) representing the phase $\phi(t)$ at time t of a periodic variable undergoing a period change is erroneous. This equation should instead read:

$$\phi(t) = N_E(t) - [N_E(t)], \quad (1)$$

where $N_E(t)$ is the number of cycles elapsed at time t since a reference epoch E . The incomplete brackets or ‘floor function’ represent the rounding down to the nearest integer. The quantity $N_E(t)$ for a constant rate of period change is given by:

$$N_E(t) = \frac{1}{\beta} \ln \left[1 + \frac{\beta}{P_0} (t - E) \right], \quad (2)$$

where β is the period change rate and P_0 is the period at the epoch E . The reader is referred to the paper by Kains et al. (2015) for a discussion and references included there.

* E-mail: armando@astro.unam.mx

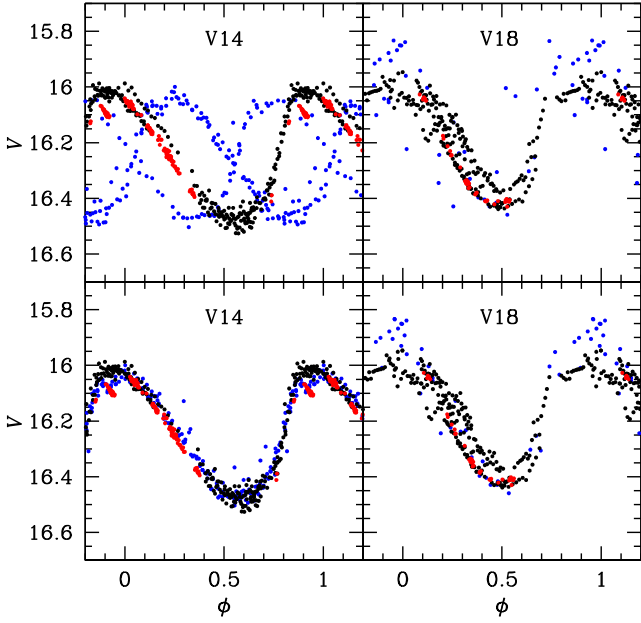


Figure 1. Light curves of the two RRc stars V14 and V18 phased with a constant period (top panels) and with the ephemerides including a secular period variation given in the text (bottom panels). The colours refer to: blue, data from 1994–1995 (Clement & Shelton 1999), black and red, data from observations at Hanle and La Silla observatories, respectively, from Arellano Ferro et al. (2013). A colour version of this figure is available in electronic form.

Consequently, our derived period change rates for the RR Lyrae stars V14 and V18 in NGC 6333 are wrong. Repeating the analysis with the correct equations, we find $P_0 = 0.327052$ d at epoch $E = 2455323.3708$ d and $\beta \approx +9.2$ d Myr $^{-1}$ for V14 and $P_0 = 0.341370$ d at epoch $E = 2455323.2745$ d and $\beta \approx +4.0$ d Myr $^{-1}$ for V18. We find that the phased light curves for V14 and V18 using these new parameters (and equations) are noticeably improved as shown in Fig 1.

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 Clement C. M., Shelton I., 1999, AJ, 118, 453
 Kains N. et al., 2015, A&A, 578, A128

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