

## Prof. ALTAN BAYKAL

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### Education Information

Doctorate, Middle East Technical University, Faculty of Arts and Sciences, Turkey 1985 - 1991

### Dissertations

Doctorate, Torque noise models for x-ray binaries, Middle East Technical University, Faculty of Arts and Sciences, 1991

### Research Areas

Physics, Astronomy and Astrophysics, Astronomy and Astrophysics: Instrumentation Techniques and Observations, Star Systems, Interstellar Medium, The Galaxy, Galactic and Extragalactic Objects and Systems, Cosmology, Natural Sciences

### Academic Titles / Tasks

Professor, Middle East Technical University, Faculty of Arts and Sciences, 2001 - Continues

Associate Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 1998 - 2003

Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 1996 - 1998

Lecturer, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 1991 - 1998

### Advising Theses

BAYKAL A., Pulse timing studies of X-ray binaries: GX 1+4, Swift J0513.4-6547, X Persei and SXP 1062, Doctorate, M.MİRAC(Student), 2019

BAYKAL A., THE SPECTRAL AND TEMPORAL PROPERTIES OF MAXI J1409-619, Post Graduate, Ç.KEREM(Student), 2019

BAYKAL A., X-ray timing properties of four anomalous x-ray pulsars: 4u 0142+61, 1e 2259+586, 1rxs j170849.0\_400910, and 1e 1841\_045, Post Graduate, D.Çerri(Student), 2015

BAYKAL A., X-ray analysis of high mass x-ray binary pulsars, Doctorate, Ş.ŞAHİNER(Student), 2015

BAYKAL A., X-ray timing properties of four anomalous X-ray pulsars: 4U 0142+61, 1E 2259+586, 1RXS J170849.0400910, and 1E 1841045, Post Graduate, D.ÇERRI(Student), 2015

BAYKAL A., Pulse phase resolved x-ray spectroscopy of four accretion powered millisecond pulsars, Post Graduate, S.MERVE(Student), 2014

BAYKAL A., Investigation of quasi-periodic noise features in X-Persei, Post Graduate, Z.ACUNER(Student), 2014

BAYKAL A., Timing properties of recently discovered soft gamma repeaters, Post Graduate, M.MİRAC(Student), 2012

BAYKAL A., Viscous time scale in accreting powered pulsars and anomalous X-ray pulsars, Post Graduate, B.İÇDEM(Student), 2011

BAYKAL A., X-ray and optical observations of high mass x-ray binaries, Doctorate, E.BEKLEN(Student), 2010

BAYKAL A., X-ray spectral and timing studies of the high mass X-ray binary pulsar 4U 1907+09, Post Graduate, Ş.ŞAHİNER(Student), 2009

BAYKAL A., X-ray and timing properties of anomalous X-ray pulsar 1e 2259+586, Post Graduate, S.ŞAŞMAZ(Student), 2007

BAYKAL A., RXTE and Chandra observations of galactic microquasars GRO J1655-40 and GRS 1915+105, Post Graduate, G.Esra(Student), 2006

BAYKAL A., RXTE and chandra observations of galactic microquasars GRS 1915+105 and GRO J1655-40, Post Graduate, G.ESRA(Student), 2006

BAYKAL A., Timing observations from Rossi X-Ray Timing Explorer (RXTE), Post Graduate, E.BEKLEN(Student), 2004

BAYKAL A., The red noise power density estimation techniques and application to the source SAX J2103.5 + 4545, Post Graduate, A.EMRE(Student), 2004

BAYKAL A., X-ray observations of accretion powered pulsars, Doctorate, S.ÇAĞDAŞ(Student), 2004

BAYKAL A., BATSE observations on accretion powered pulsars, Post Graduate, S.ÇAĞDAŞ(Student), 1999

BAYKAL A., Batse observation on accretion powered pulsars, Post Graduate, S.Çağdaş(Student), 1998

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Comprehensive analysis of the transient X-ray pulsar MAXI J1409 619**  
Donmez Ç. K. , Serim M. M. , Inam S. C. , Sahiner S., Serim D., Baykal A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.496, no.2, pp.1768-1783, 2020 (Journal Indexed in SCI)
- II. **Pulse frequency fluctuations of magnetars**  
Cerri-Serim D., Serim M. M. , Sahiner S., Inam S. C. , Baykal A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.485, no.1, pp.2-12, 2019 (Journal Indexed in SCI)
- III. **Accretion in strong field gravity with eXTP**  
De Rosa A., Uttley P., Gou L., Liu Y., Bambi C., Barret D., Belloni T., Berti E., Bianchi S., Caiazzo I., et al.  
SCIENCE CHINA-PHYSICS MECHANICS & ASTRONOMY, vol.62, no.2, 2019 (Journal Indexed in SCI)
- IV. **Observatory science with eXTP**  
in't Zand J. J. M. , Bozzo E., Qu J., Li X., Amati L., Chen Y., Donnarumma I., Doroshenko V., Drake S. A. , Hernanz M., et al.  
SCIENCE CHINA-PHYSICS MECHANICS & ASTRONOMY, vol.62, no.2, 2019 (Journal Indexed in SCI)
- V. **Dense matter with eXTP**  
Watts A. L. , Yu W., Poutanen J., Zhang S., Bhattacharyya S., Bogdanov S., Ji L., Patruno A., Riley T. E. , Bakala P., et al.  
SCIENCE CHINA-PHYSICS MECHANICS & ASTRONOMY, vol.62, no.2, 2019 (Journal Indexed in SCI)
- VI. **Discovery of a glitch in the accretion- powered pulsar SXP 1062**  
Serim M. M. , Sahiner S., Cerri-Serim D., İNAM S. Ç. , BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.471, no.4, pp.4982-4989, 2017 (Journal Indexed in SCI)
- VII. **Comprehensive timing and X-ray spectral analysis of GX 1+4**  
Serim M. M. , Sahiner S., Cerri-Serim D., İNAM S. Ç. , BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.469, no.2, pp.2509-2516, 2017 (Journal Indexed in SCI)
- VIII. **RXTE and Swift Observations of SWIFT J0513.4-6547**  
Sahiner S., Serim M. M. , BAYKAL A., İNAM S. Ç.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.456, no.1, pp.845-852, 2016 (Journal Indexed in SCI)

- IX. **Timing studies of X Persei and the discovery of its transient quasi-periodic oscillation feature**  
Acuner Z., İNAM S. Ç. , Sahiner S., Serim M. M. , BAYKAL A., Swank J.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.444, no.1, pp.457-465, 2014 (Journal Indexed in SCI)
- X. **RXTE and Swift observations of SWIFT J1729.9-3437**  
Sahiner S., İNAM S. Ç. , Serim M. M. , BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.434, no.4, pp.2772-2778, 2013 (Journal Indexed in SCI)
- XI. **A comprehensive study of RXTE and INTEGRAL observations of the X-ray pulsar 4U 1907+09**  
Sahiner S., İNAM S. Ç. , BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.421, no.3, pp.2079-2087, 2012 (Journal Indexed in SCI)
- XII. **RXTE timing analysis of the anomalous X-ray pulsar 1E 2259+586**  
Icdem B., BAYKAL A., İNAM S. Ç.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.419, no.4, pp.3109-3114, 2012 (Journal Indexed in SCI)
- XIII. **Timing and X-ray spectral features of Swift J1626.6-5156**  
Icdem B., İNAM S. Ç. , BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.415, no.2, pp.1523-1526, 2011 (Journal Indexed in SCI)
- XIV. **Viscous timescale in high mass X-ray binaries (Research Note)**  
Icdem B., BAYKAL A.  
ASTRONOMY & ASTROPHYSICS, vol.529, 2011 (Journal Indexed in SCI)
- XV. **Analysis of RXTE-PCA Observations of SMC X-1**  
İNAM S. Ç. , BAYKAL A., Beklen E.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.403, no.1, pp.378-386, 2010 (Journal Indexed in SCI)
- XVI. **THE ORBITAL PERIOD OF SWIFT J1626.6-5156**  
BAYKAL A., GÖĞÜŞ E., İNAM S. Ç. , Belloni T.  
ASTROPHYSICAL JOURNAL, vol.711, no.2, pp.1306-1309, 2010 (Journal Indexed in SCI)
- XVII. **Optical and X-ray outbursts of Be/X-ray binary system SAX J2103.5+4545**  
Kiziloglu U., Ozbilgen S., Kiziloglu N., BAYKAL A.  
ASTRONOMY & ASTROPHYSICS, vol.508, no.2, pp.895-900, 2009 (Journal Indexed in SCI)
- XVIII. **RXTE-PCA observations of XMMU J054134.7-682550**  
İNAM S. Ç. , Townsend L. J. , McBride V. A. , BAYKAL A., Coe M. J. , Corbet R. H. D.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.395, no.3, pp.1662-1668, 2009 (Journal Indexed in SCI)
- XIX. **Recent torque reversal of 4U 1907+09**  
İNAM S. Ç. , Sahiner S., BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.395, no.2, pp.1015-1020, 2009 (Journal Indexed in SCI)
- XX. **Recent RXTE/ASM and ROTSEIII observations of EXO 2030+375 (V2246 Cygni)**  
BAYKAL A., Kiziloglu U., Kiziloglu N., Beklen E., Oezbey M.  
ASTRONOMY & ASTROPHYSICS, vol.479, no.2, pp.301-306, 2008 (Journal Indexed in SCI)
- XXI. **Optical variabilities in the Be/X-ray binary system - GRO J2058+42 (CXOU J205847.5+414637)**  
Kiziloglu U., Kiziloglu N., Baykal A., Yerli S. K. , Ozbey M.  
ASTRONOMY & ASTROPHYSICS, vol.470, no.3, pp.1023-1029, 2007 (Journal Indexed in SCI)
- XXII. **Timing studies on RXTE observations of SAX J2103.5+4545**  
Baykal A., Inam S. C. , Stark M. J. , Heffner C. M. , Erkoca A. E. , Swank J. H.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.374, no.3, pp.1108-1114, 2007 (Journal Indexed in SCI)

- XXIII. **Optical observations of the Be/X-ray transient system KS 1947+300**  
Kiziloglu U., Baykal A., Kiziloglu N.  
ASTRONOMISCHE NACHRICHTEN, vol.328, no.2, pp.142-145, 2007 (Journal Indexed in SCI)
- XXIV. **Pulsar braking indices, glitches and energy dissipation in neutron stars**  
Alpar M. A., Baykal A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.372, no.1, pp.489-496, 2006 (Journal Indexed in SCI)
- XXV. **Evidence of a change in the long-term spin-down rate of the X-ray pulsar 4U 1907+09**  
Baykal A., Inam S. C., Beklen E.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.369, no.4, pp.1760-1764, 2006 (Journal Indexed in SCI)
- XXVI. **Recent timing studies on RXTE observations of 4U 1538-52**  
Baykal A., Inam S. C., Beklen E.  
ASTRONOMY & ASTROPHYSICS, vol.453, no.3, pp.1037-1040, 2006 (Journal Indexed in SCI)
- XXVII. **ROTSE observations of the young cluster IC 348**  
Kiziloglu U., Kiziloglu N., Baykal A.  
ASTRONOMICAL JOURNAL, vol.130, no.6, pp.2766-2777, 2005 (Journal Indexed in SCI)
- XXVIII. **X-ray spectral evolution of Her X-1 in a low state and the following short high state**  
Inam S., Baykal A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.361, no.4, pp.1393-1398, 2005 (Journal Indexed in SCI)
- XXIX. **Discovery of a soft spectral component and transient 22.7 second quasi-periodic oscillations of SAX J2103.5+4545**  
Inam S., Baykal A., Swank J., Stark M.  
ASTROPHYSICAL JOURNAL, vol.616, no.1, pp.463-468, 2004 (Journal Indexed in SCI)
- XXX. **X-ray flux related timing and spectral features of 2S 1417-62**  
Inam S., Baykal A., Scott D., Finger M., Swank J.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.349, no.1, pp.173-180, 2004 (Journal Indexed in SCI)
- XXXI. **The first hours of the optical afterglow from the cosmic gamma-ray burst 030329**  
Burenin R., Sunyaev R., Pavlinsky M., Denisenko D., Terekhov O., Tkachenko A., Aslan Z., Khamitov I., Uluch K., Alpar M., et al.  
ASTRONOMY LETTERS-A JOURNAL OF ASTRONOMY AND SPACE ASTROPHYSICS, vol.29, no.9, pp.573-578, 2003 (Journal Indexed in SCI)
- XXXII. **The steady spin-down rate of 4U 1907+09**  
Baykal A., Inam C., Alpar M., Zand J., Strohmayer T.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.327, no.4, pp.1269-1272, 2001 (Journal Indexed in SCI)
- XXXIII. **Hydrothermal and microwave synthesis of boron phosphate, BPO(4)**  
Baykal A., Kizilyalli M., Toprak M., Kniep R.  
TURKISH JOURNAL OF CHEMISTRY, vol.25, no.4, pp.425-432, 2001 (Journal Indexed in SCI)
- XXXIV. **Discovery of the orbit of the transient X-ray pulsar SAX J2103.5+4545**  
Baykal A., Stark M., Swank J.  
ASTROPHYSICAL JOURNAL, vol.544, no.2, 2000 (Journal Indexed in SCI)
- XXXV. **Differences between the two anomalous X-ray pulsars: variations in the spin-down rate of 1E 1048.1-5937 and an extended interval of quiet spin-down in 1E 2259+586**  
Baykal A., Strohmayer T., Swank J., Alpar M., Stark M.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.319, no.1, pp.205-208, 2000 (Journal Indexed in SCI)
- XXXVI. **X-ray powder diffraction and IR study of NaMg(H<sub>2</sub>O)(2)[BP208]center dot H<sub>2</sub>O and NH<sub>4</sub>Mg(H<sub>2</sub>O)(2)[BP208]center dot H<sub>2</sub>O**

- Baykal A., Kizilyalli M., Knier R.  
JOURNAL OF MATERIALS SCIENCE, vol.35, no.18, pp.4621-4626, 2000 (Journal Indexed in SCI)
- XXXVII. **Short-term pulse frequency fluctuations of OAO 1657-415 from RXTE observations**  
Baykal A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.313, no.3, pp.637-640, 2000 (Journal Indexed in SCI)
- XXXVIII. **Post-glitch RXTE-PCA observations of the Vela pulsar**  
Gurkan M., Baykal A., Alpar M., Ogelman H., Strohmayer T.  
ASTRONOMY & ASTROPHYSICS, vol.356, no.3, pp.1136-1140, 2000 (Journal Indexed in SCI)
- XXXIX. **X-ray flux and pulse frequency changes of three high mass X-ray binary pulsars: Vela X-1, GX 301-2 and OAO 1657-415**  
Inam S., Baykal A.  
ASTRONOMY & ASTROPHYSICS, vol.353, no.2, pp.617-623, 2000 (Journal Indexed in SCI)
- XL. **The timing noise of PSR 0823+26, 1706-16, 1749-28, 2021+51 and the anomalous braking indices**  
Baykal A., Alpar M., Boynton P., Deeter J.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.306, no.1, pp.207-212, 1999 (Journal Indexed in SCI)
- XLI. **Spin down and oscillations in 4U 1907+09: a retrograde disk?**  
Zand J., Strohmayer T., Baykal A.  
NUCLEAR PHYSICS B-PROCEEDINGS SUPPLEMENTS, vol.69, pp.224-227, 1999 (Journal Indexed in SCI)
- XLII. **Spin-down rate of 1E 2259+586 from RXTE observation**  
Baykal A., Swank J., Strohmayer T., Stark M.  
ASTRONOMY & ASTROPHYSICS, vol.336, no.1, pp.173-176, 1998 (Journal Indexed in SCI)
- XLIII. **Recent X-ray measurements of the accretion-powered pulsar 4U 1907+09**  
in't Zand J., Baykal A., Strohmayer T.  
ASTROPHYSICAL JOURNAL, vol.496, no.1, pp.386-394, 1998 (Journal Indexed in SCI)
- XLIV. **The spectrum and dips of RE 0751+14: A joint evaluation of ROSAT and ASCA archival data**  
Kiziloglu U., Baykal A., Alev M., Gogus E.  
ASTROPHYSICS AND SPACE SCIENCE, vol.259, no.2, pp.191-203, 1998 (Journal Indexed in SCI)
- XLV. **The torque and X-ray flux changes of OAO 1657-415**  
Baykal A.  
ASTRONOMY & ASTROPHYSICS, vol.319, no.2, pp.515-524, 1997 (Journal Indexed in SCI)
- XLVI. **Low frequency flickering of TT Arietis: Hard and soft X-ray emission region**  
Baykal A., Kiziloglu U.  
ASTROPHYSICS AND SPACE SCIENCE, vol.246, no.1, pp.29-38, 1997 (Journal Indexed in SCI)
- XLVII. **Pulse frequency changes of 1E 2259+586 and the binary interpretation**  
Baykal A., Swank J.  
ASTROPHYSICAL JOURNAL, vol.460, no.1, pp.470-477, 1996 (Journal Indexed in SCI)
- XLVIII. **EXPECTANCY OF LARGE PULSAR GLITCHES - A COMPARISON OF MODELS WITH THE OBSERVED GLITCH SAMPLE**  
ALPAR M., BAYKAL A.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.269, no.4, pp.849-856, 1994 (Journal Indexed in SCI)
- XLIX. **A STATISTICAL STUDY OF THE 164 DAY CLOCK NOISE OF THE RELATIVISTIC BEAMS IN SS-433**  
BAYKAL A., ANDERSON S., MARGON B.  
ASTRONOMICAL JOURNAL, vol.106, no.6, pp.2359-2364, 1993 (Journal Indexed in SCI)
- L. **THE NOISE IN THE 35-D CYCLE OF HER X-1**  
BAYKAL A., BOYNTON P., DEETER J., SCOTT D.  
MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY, vol.265, no.2, pp.347-350, 1993 (Journal Indexed in SCI)
- LI. **AN EMPIRICAL TORQUE NOISE AND SPIN-UP MODEL FOR ACCRETION-POWERED X-RAY PULSARS**

BAYKAL A., OGELMAN H.

ASTRONOMY & ASTROPHYSICS, vol.267, no.1, pp.119-125, 1993 (Journal Indexed in SCI)

LII. **A SHOT NOISE MODEL FOR A 2-COMPONENT NEUTRON-STAR**

BAYKAL A., ALPAR A., KIZILOGLU U.

ASTRONOMY & ASTROPHYSICS, vol.252, no.2, pp.664-668, 1991 (Journal Indexed in SCI)

### Articles Published in Other Journals

I. **Probing stellar winds and accretion physics in high mass X ray binaries and ultra luminous X ray sources with LOFT**

Maoura O., Maoura O., Dorosheknko V., BAYKAL A., Vi D., Orlandini M., Orlandini M., Orlandini M., Maoura O., Orlandini M., et al.

Loft white papers, 2015 (Refereed Journals of Other Institutions)

II. **Long term optical observations of Be X Ray binary system V0332 53**

Umit K., Kiziloglu N., Mehtap O., BAYKAL A.

IBVS, 2008 (Refereed Journals of Other Institutions)

### Refereed Congress / Symposium Publications in Proceedings

I. **X Ray Timing Properties of GX 1 4**

SERİM M. M. , Sahiner S., Serim Cerri D., Inam S. C. , BAYKAL A.

11 th Integral Conference, 10 - 14 October 2016

II. **Timing Noise of Magnetars**

Serim Cerri D., SERİM M. M. , Yuce D., Sahiner S., Inam S. C. , BAYKAL A.

11 th Integral Conference, 10 - 14 October 2016

III. **RXTE an Swift Observations of SWIFT J0513 4 6547**

Muhammed Mirac S., Seyda S., BAYKAL A., Cagdas I.

The New High Energy Sky after a Decade of Discoveries, Roma, 5 - 09 October 2015

IV. **The Large Observatory For x ray Timing**

Marco F., Jd d. H. , Enrico B., BAYKAL A., den Herder J., den Herder J., den Herder J., den Herder J., den Herder J., et al.

Conference on Space Telescopes and Instrumentation - Ultraviolet to Gamma Ray, 22 - 26 June 2014

V. **Noise Strength Estimates of Three SGRs: Swift J1822.3-1606, SGR J1833-0832 and Swift J1834.9-0846**

Serim M. M. , İNAM S. Ç. , BAYKAL A.

International Conference on Electromagnetic Radiation from Pulsars and Magnetars (ERPM), Zielona Gora, Poland, 24 - 27 April 2012, vol.466, pp.255-256

VI. **Pulse Profiles of Swift J1626.6+5156**

BAYKAL A., İNAM S. Ç. , İcдем B.

Conference on Astrophysics of Neutron Stars in Honor of M Ali Alpar (ASTRONS), Cesme, Turkey, 2 - 06 August 2010, vol.1379

VII. **Recent Spin Rate Measurements of 4U 1907+09**

Sahiner S., İNAM S. Ç. , BAYKAL A.

Conference on Astrophysics of Neutron Stars in Honor of M Ali Alpar (ASTRONS), Cesme, Turkey, 2 - 06 August 2010, vol.1379

VIII. **Accretion powered X-ray pulsars**

Baykal A.

6th NATO-Advanced-Study-Institute on Electromagnetic Spectrum of Neutron Stars, Marmaris, Turkey, 7 - 18 June 2004, vol.210, pp.263-277

## **IX. Expectancy of large pulsar glitches**

Baykal A., Alpar A.

IAU Colloquium 160 on Pulsars - Problems and Progress, Sydney, Australia, 8 - 12 January 1996, vol.105, pp.105-106

## **Supported Projects**

BAYKAL A., BALMAN Ş., Project Supported by Higher Education Institutions, Bayes İstatistik Tekniđiyle Pulsarların ve Beyaz Cücelerin Güç Spektrumlarının Oluřturulması, 2016 - 2016

## **Citations**

Total Citations (WOS):735

h-index (WOS):17

## **Awards**

Baykal A., Mustafa Parlar Bilim Ödülü, Mustafa Parlar Vakfı, December 2019

Baykal A., TÜBİTAK Teřvik Ödülü, Tübitak, July 2000