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(STA 2013)

**Sousse, Tunisia
20 – 22 December 2013**



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Thursday, December 19, 2013

Inscription for the conference : 16h00–21h00

Friday, December 20, 2013

Opening of the 14th international conference STA'2013 : 08h30–09h00

Plenary Session

Presidents: Abdallah BENZAOUIA & Driss MEHDI

09h00–10h00	Innovative Designs in Control and Diagnosis for Engines of the Future Pr. Abdelouahab Aitouche, University of Lille, France	STA'2013–SP1
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N/A

Coffee break : 10h00–10h20

Session FriA1: Analysis and Systems Control (ACS)

Presidents: Mourad KCHAOU & Anis SALLEMI

10h20–10h40	Identification and Hybrid Control of a Station of Irrigation by Sprinkling M. R. Mejri, A. Zaafour and A. Chaari	PID3169–ACS
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10h40–11h00	Time-Varying Fuzzy Sets in adaptive control S. Ziani and S. Filali	PID3181–ACS
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11h00–11h20	An Advanced Linearization Control for a Class of Switched Nonlinear Systems A. Abdelkarim, K. Jouili and N. Benhadj Braiek	PID3187–ACS
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11h20–11h40	A Fuzzy Approximator of Model Predictive Control H. Boumaza and K. Belarbi	PID3214–ACS
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11h40–12h00	Tracking Control For Induction Motor Using Takagi-Sugenou Approach H. Ben Zina, M. Allouche, M. Chaabane and M. Souissi	PID3224–ACS
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Session FriA2: *Control of Electrical Vehicles (CEV)*

Presidents: Ahmed EI HAJJAJI & Lazhar RAHMANI

10h20–10h40	A new control technic for induction machine based on the Lyapunov theory O. Naifar, G. Boukettaya and A. Ouali	<i>PID3162–CEV</i>	31
10h40–11h00	Fuzzy Control for Speed Tracking of an Electrical Vehicle enclosing an Axial-Flux Synchronous Motor H. Aloui, A. Ben Jridi, N. Chaker and R. Neji	<i>PID3209–CEV</i>	36
11h00–11h20	A Supervisory Command and Simulation of a PEMFC/UCap Hybrid Electrical System S. Ben Slama, S. Nasri and A. Cherif	<i>PID3261–CEV</i>	114
11h20–11h40	Torque Control Development for Electric-Vehicles Motor-Wheels Using Two Techniques I. Lachhab and L. Krichen	<i>PID3309–CEV</i>	43

Session FriA3: *Renewable Energy Conversion (REC)*

Presidents: Tahar BAHI & Mohamed Faouzi MIMOUNI

10h20–10h40	The Effect of the Injected Active and Reactive Powers for the Improvement of Voltage Amplitude and Frequency Qualities Y. Saoudi and H. Hadj Abdallah	<i>PID3180–REC</i>	47
10h40–11h00	Performance Evaluation of an Electrical coupling Multi-Port Converter M. Shaiek, S. Belghali, R. Trabelsi and M. F. Mimouni	<i>PID3274–REC</i>	52
11h00–11h20	Non Linear Controllers applied to a DC-DC Boost Converter Y. Massaoudi, D. Elleuch, G. Hashim, D. Mehdi and T. Damak	<i>PID3305–REC</i>	59
11h20–11h40	A comparison between Turn-Off Time of 4H-SiC and Silicon Power Thyristor having the same breakdown voltage 5KV A. Jedidi, H. Garraab and K. Besbes	<i>PID3216–PEC</i>	120
11h40–12h00	SVM modulation strategy of direct matrix converter L. Rmili, S. Rahmani, F. Fnaiech and K. Al-Haddad	<i>PID3264–PEC</i>	126

Session FriA4: *Robust and Adaptive Control (RAC)*

Presidents: **Brahim BOUTAMINA & Abdelkader CHAARI**

10h20–10h40	Decentralized Robust Guaranteed Cost Control for Multimachine Power Systems H. Rtibi, S. Elloumi and N. Benhadj Braiek	<i>PID3242–RAC</i>	64
10h40–11h00	A new design of robust H_∞ filters for uncertain continuous-time stochastic systems A. Hmamed, B. Boukili and Fernando Tadeo	<i>PID3315–RAC</i>	74
11h00–11h20	Parameter-dependent robust stability of uncertain Time-Delay Systems S. Kririm, A. Hmamed and Fernando Tadeo	<i>PID3316–RAC</i>	79
11h20–11h40	Improved fault-tolerant fuzzy sliding-mode control for a class of MIMO nonlinear systems F. Baklouti, S. Aloui, O. Pagès, A. Chaari and A. El Hajjaji	<i>PID3330–DFC</i>	376

Lunch: 12h20–15h00

Session FriB1: *Analysis and Systems Control (ACS)*

Presidents: **Tarak DAMAK & Faouzi M'SAHLI**

15h00–15h20	Output tracking control of inverted cart-pendulum using input-output linearization and predictive control M. Charfeddine, K. Jouili and N. Benhadj Braiek	<i>PID3215–ACS</i>	84
15h20–15h40	Bayesian estimation via extended and unscented Kalman particle filtering for nonlinear stochastic systems F. Souibgui, F. Ben Hmida and A. Chaari	<i>PID3223–ACS</i>	89
15h40–16h00	Performance evaluation of Fuzzy PI/PD controller for BLDC drives: A real-time implementation A. Rubaai	<i>PID3168–ACS</i>	96
16h00–16h20	Robust self-tuning regulation for stochastic systems described by ARARMAX mathematical model N. Touijer and S. Kamoun	<i>PID3229–ACS</i>	104

16h20–16h40	Optimal state derivative feedback control for singular systems R. Zaghdoud, S. Salhi and M. Ksouri	<i>PID3244–ACS</i>	110
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Session FriB2: Renewable Energy Conversion (REC)

Presidents: **Hsan HADJ ABDALLAH & Mansour SOUISSI**

15h00–15h20	Power quality improvement of a wind farm without adding any type of storage system M. Rekik, A. Abdelkafi and L. Krichen	<i>PID3198–REC</i>	132
15h20–15h40	Power flow solution for power systems including FACTS devices and wind farms I. Ben Jaoued, T. Guesmi and H. Hadj Abdallah	<i>PID3259–REC</i>	136
15h40–16h00	Experimental Study on a New Conception of Hybrid PV / T Collector K. Touafek, A. Khelifa, E. H. Khettaf and A. Embarek	<i>PID3271 –REC</i>	140
16h00–16h20	Design of a wind energy conversion power system based on permanent magnet synchronous generator W. Ouled Amor, M. Ghariani and R. Neji	<i>PID3186–REC</i>	146
16h20–16h40	Unified Power Flow Controller Applications in Interconnected Power System: A Case Study of Nigerian Transmission System M. O. Ganiyu and T. M. Adekilekun	<i>PID3161–REC</i>	559

Session FriB3: Circuits, Electronics and Micro-electronics (CEM)

Presidents: **Hamadi GHARIANI & Mongi LAHIANI**

15h00–15h20	An FPGA Implementation and comparison of the SHA-256 and Blake-256 F. Kahri, B. Bouallegue, M. Machhout and R. Tourki	<i>PID3195–CEM</i>	152
15h20–15h40	A Fast Coding Algorithm based on fast mode decision for HEVC Standard H. Kibeya, F. Belghith, H. Loukil, M. A. Ben Ayed and N. Masmoudi	<i>PID3217–CEM</i>	158

15h40–16h00	Equivalent Circuit Modeling of SiGe/Si solar cell including Interfacial defect effects K. Kacha, F. Djeflal, B. Toufik and M. Meguellati	<i>PID3282–CEM</i>	164
16h00–16h20	Wireless Power Transmission Technologies and Applications H. Lakhal, M. Dhib, H. Ghariani and M. Lahiani	<i>PID3286–CEM</i>	168
16h20–16h40	An electronic nose for detection pollutant odorant and olfaction classification using neural network R. Faleh, S. Bedoui, A. Kachouri and M. Samet	<i>PID3327–CEM</i>	174

Saturday, December 21, 2013

Plenary Session

Presidents: Abdelaziz HMAMED & Fernando TADEO

09h00–10h00	Design of sampled date observers Pr. Mondher Farza, University of Caen Lower Normandy	<i>STA'2013–SP2</i>	N/A
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Coffee break : 10h00–10h20

Session SatA1: Neuro Fuzzy Controllers (NFC)

Presidents: Mourad KCHAOU & Fethi FOURATI

10h20–10h40	A fuzzy sliding mode observer for the nonlinear uncertain system based on T-S model O. Saadaoui, L. Chaouech and A. Chaari	<i>PID3318–NFC</i>	179
10h40–11h00	Direct torque control for asynchronous machine using artificial neural networks S. Boukadida, S. Gdaim and A. Mtibaa	<i>PID3204–NFC</i>	185
11h00–11h20	Application of fuzzy logic in DTC scheme using XSG Y. Bchir, S. Gdaim and A. Mtibaa	<i>PID3212–NFC</i>	191

11h20–11h40	Stability analysis of polynomial fuzzy systems with Time-Delay via sum of squares (SOS) approach F. Siala, H. Gassara, A. El Hajjaji and M. Chaabane	<i>PID3237–NFC</i>	197
11h40–12h00	Decentralized static output feedback fuzzy control design for nonlinear interconnected networked control systems C. Latrach, M. Kchaou, A. Rabhi and A. El Hajjaji	<i>PID3288–NFC</i>	201
12h00–12h20	Modeling using ART2 classifier F. Fourati	<i>PID3156–NFC</i>	540

Session SatA2: *Diagnosis and Fault Tolerant Control (DFC)*

Presidents: Abdelwahab AITOUCHE & Fayçal BEN HMIDA

10h20–10h40	A qualitative approach to single fault isolation in switching systems T. Mekki, S. Triki and A. Kamoun	<i>PID3160–DFC</i>	220
10h40–11h00	Positive observers for continuous time positive interval systems with time-delay I. Zaidi, Fernando Tadeo and M. Chaabane	<i>PID3241–DFC</i>	225
11h00–11h20	A Fault-Tolerant Control for Induction-Motors Using Sliding Mode Scheme T. Roubache, S. Chaouch and M. S. Nait Said	<i>PID3243–DFC</i>	231
11h20–11h40	Energy minimization algorithm based on Bayesian approach for fault tolerant detection in wireless sensor network S. Trab, B. Boussaid, A. Zouinkhi and N. Abdelkrim	<i>PID3252–DFC</i>	237
11h40–12h00	Contribution to the monitoring of manufacturing systems with time constraints: Application to a surface treatment line A. Mhalla, O. Jenhani, S. C. Dutilleul and M. Benrejeb	<i>PID3298–DFC</i>	243
12h00–12h20	UIO-based fault estimation for a class of neutral time-delay system A. Elhsoumi, S. BelHadj Ali, R. El Harabi and M. N. Abdelkrim	<i>PID3308–DFC</i>	251

12h20–12h40	Importance of the fourth and fifth intrinsic mode functions for bearing fault diagnosis J. Benali, M. Sayadi, F. Fnaiech, B. Morello and N. Zerhouni	PID3312–DFC	259
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Session SatA3: Control of Robotics Systems (CRS) & Mobile Robots and Navigation (MRN) & Modelling and simulation of Robotic Systems (MRS)

Presidents: Hafedh ABID & Anis SALLEMI

10h20–10h40	Analytical modeling and optimization of new swimming microrobot design using genetic algorithm computations F. Sriari, M. Meguellati, S. Lamir and F. Djeflal	PID3250–CRS	265
10h40–11h00	Second-order sliding mode control applied to underactuated manipulators S. Mahjoub, F. Mnif and N. Derbel	PID3287–CRS	269
11h00–11h20	Robust control of wheeled mobile robot in presence of disturbances and uncertainties Y. Koubaa, M. Boukettaya and T. Dammak	PID3236–MRN	274
11h20–11h40	Fir digital filter design by using windows method with MATLAB A. Eleti and A. Zerek	PID3301–MRN	282
11h40–12h00	Model validation of a Humanoid robot via standard scenarios A. Aloulou and O. Boubaker	PID3269–MRS	288
12h00–12h20	Comparative Study Between PI and Sliding Mode Controllers for Flexible Joint Manipulator Driving by Brushless DC Motor L. Zouari, H. Abid and M. Abid	PID3294–MRS	294

Session SatA4: Tele Communications Engineering (TCE)

Presidents: Lotfi KAMOUN & A. R. ZEREK

10h20–10h40	Evaluation the performance of practical WLAN technology O. Elrajubi	PID3147–TCE	300
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10h40–11h00	Syndex-mixte: A hardware /software partitioning cad tool O. Feki, T. Grandpierre, M. Akil, N. Masmoudi and Y. Sorel	<i>PID3148–TCE</i>	N/A
11h00–11h20	Automatic hardware/softwareinterface generation for syndex-mixte O. Feki, T. Grandpierre, M. Akil and N. Masmoudi	<i>PID3155–TCE</i>	N/A
11h20–11h40	Selective encryption of CAVLC for H.264/AVC N. Khelif, T. Damak, F. Kammoun and N. Masmoudi	<i>PID3179–TCE</i>	314
11h40–12h00	Planning and dimensioning a high speed 4G WiMAX network in Tripoli area T. A. Benmusa, A. J. Belgasseem and M. A. S. Ibrahim	<i>PID3278–TCE</i>	318

Lunch: 12h40–15h00

Session SatB1: *Analysis and Systems Control (ACS) & Industrial and Agricultural Applications (IAA)*

Presidents: Mohamed Naceur ABDELKRIM & Samir LADACI

15h00–15h20	Hybrid synchronization of discrete chaotic systems based on aggregation techniques for encryption S. Hammami	<i>PID3249–ACS</i>	325
15h20–15h40	Optimal control approach with block pulse functions I. S. Aousgi, S. Elloumi and N. Benhadj Braiek	<i>PID3246–ACS</i>	331
15h40–16h00	Setpoint optimization for aspiration of the phosphoric acid slurry: Skhira plant case S. Ben Mohamed, B. Boussaid, R. Arfa, C. Tahri and N. Abdelkrim	<i>PID3258–IAA</i>	338

Session SatB2: *Artificial Neural Networks (ANN) & Supervision and Intelligent Systems (SIS)*

Presidents: Abdelaziz HMAMED & Mounir SAMET

15h00–15h20	Emulation of multivariable non square and nonlinear systems N. Bahri, A. Atig, F. Druaux, D. Lefebvre and R. Ben Abdennour	<i>PID3289–ANN</i>	344
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15h20–15h40	Neural networks for optimized reverse logistics network: If collection of end of life W. Ellili, M. Samet and A. Kachouri	<i>PID3189–SIS</i>	350
15h40–16h40	Optimization of switching instants for optimal control of switched discrete systems based on particle swarm algorithm M. Sakly, A. A. Kahloul, N. Majdoub, A. Sakly and F. M'sahli	<i>PID3325–SIS</i>	358

Session SatB3: *Diagnosis and Electrical Machines (DEM) & Renewable Energy Conversion (REC) & Sliding Mode Control (SMC)*

Presidents: **Mohamed BOUSSAK & Fernando TADEO**

15h00–15h20	Diagnosis of cage induction motors subject to unbalanced supply voltage conditions including space and time harmonics D. Kouchih, R. Hachlaf, O. Benzineb, M. Tadjine and M. S. Boucherit	<i>PID3228–DEM</i>	546
15h20–15h40	A low-cost sensor for online detection of a transient abrupt drop in the drive speed of a three-phase synchronous generator M. Salah, K. Bacha and A. Chaari	<i>PID3232–DEM</i>	364
15h40–16h00	Comparative Study of the control by sliding mode and the vectorial control of a brushless doubly fed induction generator M. A. Mahboub, S. Drid and H. Radjeai	<i>PID3293–SMC</i>	N/A

Session SatB4: *Description and System Identification (DSI) & Biomedical Signal Processing and Control (BSP)*

Presidents: **Khaled BELARBI & Faouzi M'SAHLI**

15h00–15h20	Fault detection based on two-stage recursive least squares parameter estimation N. A. Ambark Shashoa, A. Saad Emhemmed and S. Khalifa Yakhlef	<i>PID3279–DSI</i>	382
15h20–15h40	Hash function and digital signature based on elliptic curve M. Dridi, R. Ouni, R. Haddaji and A. Mtibaa	<i>PID3262–BSP</i>	388

15h40–16h00	Correction applied to the propagation model of UWB wave in human biological tissue obtained by FDTD method for estimation of the wave form at the heart M. Ketata, M. Dhieb, A. Loussert, H. Ghariani and M. Lahiani	PID3304–BSP	393
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Sunday, December 22, 2013

Session SunA1: Analysis and Systems Control (ACS)

Presidents: **Kamel ABDERRAHIM & David BENSOUSSAN**

09h00–09h20	Robust and ultrafast design of a control system based on optimal sensitivity and optimal complementary sensitivity D. Bensoussan, Y. Sun and M. Hammami	PID3281–ACS	401
09h20–09h40	Observer for Takagi Sugeno descriptor system using two approaches I. Kilani, D. Jabri, S. Bel Hadj Ali Naoui and M. N. Abdelkrim	PID3297–ACS	408
09h40–10h00	An experimental validation of the Kohonen clustering approach for PWARX model identification on a semi-batch reactor Z. Lassoued and K. Abderrahim	PID3313–ACS	413
10h00–10h20	Bearing defects decision making using higher order spectra features and support vector machines L. Saidi and F. Fnaiech	PID3326–ACS	419

Session SunA2: Adaptive System and Control (ASC) & Fractional-order Systems and Controls (FSC) & Networks and Electrical Machines (NEM)

Presidents: **Mohamed SEGHIR BOUCHERIT & Moez ALLOUCHE**

09h00–09h20	Adaptive observation of stator flux and resistance for speed sensorless DTC controlled IM Drives D. Kouchih, M. Tadjine and M. Seghir Boucherit	PID3159–NEM	553
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09h20–09h40	Stabilization by pole placement of constrained uncertain systems: Application to a Buck converter A. Benzaouia, H. M. Soliman and M. Chaabane	<i>PID3335–ACS</i>	448
09h40–10h00	Performance comparison on three parameter determination method of Fractional PID controllers A. Eltifi, M. Ghariani and R. Neji	<i>PID3178–FSC</i>	453
10h00–10h20	Identification of a fractional order model by a least squares technique:Hn1,n2 Model A. Khadhraoui, K. Jelassi and J. C. Trigeassou	<i>PID3248–FSC</i>	461

Session SunA3: Renewable Energy Conversion (REC)

Presidents: Dhaker ABBES & Youcef SOUFI

09h00–09h20	Design of a solar dish concentrator according to the needed energy for a given application Y. Kadri, N. Derbel and H. Haj Abdallah	<i>PID3310–REC</i>	425
09h20–09h40	Linear current control technique for grid connected photovoltaic system R. M. Essefi, M. Souissi and H. Hadj Abdallah	<i>PID3314–REC</i>	432
09h40–10h00	MPPT control of wind pumping plant using induction generator M. A. Zeddini, R. Pusca, A. Sakly and M. F. Mimouni	<i>PID3306–REC</i>	438
10h00–10h20	Emulation of a hybrid PV-wind-battery system D. Abbes and A. Martinez	<i>PID3311–REC</i>	443

Coffee break: 10h20-10h40

Session SunB1: Sliding Mode Control (SMC)

Presidents: Slim FILALI & Ahmed Saïd NOURI

10h40–11h00	Discrete second order sliding mode control for multivariable systems via Input-Output models H. Romdhane, K. Dehri and A. Said Nouri	<i>PID3190–SMC</i>	468
11h00–11h20	Second-order sliding mode control of a permanent magnet synchronous motor (PMSM) N. Bounasla and K. Hemsas	<i>PID3192–SMC</i>	535

11h20–11h40	Simultaneous actuator and sensor fault reconstruction using polytopic sliding mode observer for linear parameter varying systems A. Ben brahim, S. Dhahri, F. Ben Hmida and A. Sellami	PID3333–SMC
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Session SunB2: Imagery and Forms Recognition (IFR) & Imagery, Robotics and Mecatronics (IRM)

Presidents: Ahmed BEN HMIDA & Amer R. ZEREK

10h40–11h00	Detection of facial expressions based on morphological face features and minimum distance classifier K. A. Bozed, O. Adjei and A. Mansour	PID3221–IFR
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11h00–11h20	Subbands selection in wavelet packet decomposition for face recognition N. Radji, D. Cherifi and A. Azrar	PID3234–IFR
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11h20–11h40	An additive image watermarking method based on particle swarm optimization S. Naffouti, H. Homri, A. Sakly and A. Mtibaa	PID3324–IFR
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11h40–12h00	Collision prediction between vehicles in an Unstructured Environment I. Abdi Hadi, C. Pegard and E. Mouaddib	PID3239–IRM
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Session SunB3: Electrical and Computer Engineering (ECE) & Circuits, Electronics and Micro-electronics (CEM)

Presidents: Hafed ABID & Othman HASNAOUI

10h40–11h00	Simulation of GSM planning and optimization with MATLAB S. K. Yakhlef, M. M. Almrabet and L. A. Enamroud	PID3283–ECE
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11h00–11h20	2D magnetic equivalent circuit model of an electronic valve actuator M. Klach, H. Aloui and R. Neji	PID3290–ECE
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11h20–11h40	HTS_ARAB_TALK: A new implementation of an Arabic speech synthesis system M. K. Krichen and A. Cherif	PID3175–CEM
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N/A

Session SunB4: Control and Embedded System (CES)

Presidents: Maher HAMMAMI & Lotfi MTIBAA

10h40–11h00	Direct torque control of an induction motor using Xilinx system generator: FPGA implementation N. Sghaier, S. Gdaim, R. Trabelsi, M. F. Mimouni and B. Boussoufi	<i>PID3121–CES</i>	207
11h00–11h20	Sensor actuator ethernet-based networked control systems E. Moustafa, H. Halawa, R. Daoud and H. Amer	<i>PID3174–CES</i>	530
11h20–11h40	A novel hardware architecture of deblocking filter in H.264/AVC L. A. Ayadi, T. Damak, H. Loukil and Nouri Masmoudi	<i>PID3211–CES</i>	474
11h40–12h00	MPSoC architecture for H.264/AVC intra prediction chain on SoCLib platform and FPGA technology N. Belhadj, M. Turki, Z. Marrekchi, M. Ali Ben Ayed and N. Masmoudi	<i>PID3247–CES</i>	216

Additional Papers:

	Modeling and control of a desalination unit based solar energy M. Smaoui and L. Krichen	<i>PID3265–IFR</i>	370
	Sliding Mode Observer-Based Fault-Detection of Inter-Turn Short-Circuit in Induction Motor T. Sellami, H. Berriri, S. Jelassi and M. F. Mimouni	<i>PID3334–IFR</i>	524