

# 5th AITC-AIT PROGRAM

(updated 18/9/06)

WEDNESDAY 20

THURSDAY 21

FRIDAY 22

9.00	REGISTRATION (9:00-10:00)	<b>SESSIONS C1 and C2 (9:00-10:45)</b>	<b>SESSIONS F1 and F2 (9:00-10:45)</b>
10.00	<i>welcome message</i>		
10.30	<i>Coffee Break</i>		
10.45		<i>Coffee Break</i>	<i>Coffee Break</i>
11.00	<b>GENERAL LECTURE (11:00-12:00)</b> by B. Bhushan	<b>SESSIONS D1 and D2 (11:00-12:45)</b>	<b>SESSIONS G1 and G2 (11:00-12:45)</b>
12.00	<i>Lunch</i>		
12.45		<i>Lunch</i>	<i>Lunch</i>
13.00			
13.30	<b>SESSIONS A1 and A2 (13:30-15:15)</b>	<b>SESSIONS E1 and E2 (14:00-15:45)</b>	
14.00			
14.30			
15.15	<i>Coffee Break</i>		
15.30	<b>SESSIONS B1 and B2 (15:30-17:15)</b>		
15.45			
17.00		<i>Visit to Torrechiara Castle</i>	
20.00		<i>Social dinner</i>	

## **A1 – CONTACT PROBLEMS**

- STATISTICAL MODEL FOR ELASTIC-PLASTIC ROUGH SURFACE UNLOADING  
*Y. KADIN, I. ETSION, Y. KLIGERMAN*
- EXPERIMENTAL INVESTIGATION OF ELASTIC-PLASTIC SPHERICAL CONTACT  
*A. OVCHARENKO, I. ETSION, G. HALPERIN*
- A CONTRIBUTION OF EHL THEORY FOR ESTIMATION OF TIRE-ROAD FRICTION IN WET CONDITIONS  
*M.KANE, M. T. DO*
- SOME ASPECTS OF RUBBING MECHANISM IN ROTORDYNAMICS  
*N. BACHSCHMID, P. PENNACCHI, E. TANZI*
- EFFECT OF CONTACT STRIP - CONTACT WIRE INTERACTION ON CURRENT TRANSFER AT HIGH SLIDING SPEED IN THE MID-HIGH FREQUENCY RANGE  
*A. COLLINA, S. MELZI*

## **B1 – CONTACT PROBLEMS**

- STRUCTURAL INVESTIGATION OF SURFACE PATTERN IN CIRCULAR CONTACT UNDER IMPACT LOADING  
*G.ANDREI, C.GHEORGHIES, L.ANDREI, I. BIRSAN*
- EVALUATION OF PRESSURE FROM FILM THICKNESS WITHIN EHL CONTACT WITH DENTED SURFACES  
*M.VRBKA, M.VAVERKA, I.KRUPKA, M.HARTL, L.URBANEC*
- A THEORETICAL MODEL FOR THE GEAR RATTLE ANALYSIS IN AUTOMOTIVE MANUAL TRANSMISSIONS ACCOUNTING FOR THE GEARS LUBRICATION  
*R.BRANCATI, E.ROCCA, R.RUSSO*
- EXPERIMENTAL TEST RIG FOR THE EVALUATION OF OIL SQUEEZE EFFECTS BETWEEN THE IMPACTING TEETH OF A MESHING GEAR  
*R.BRANCATI, E.ROCCA, R.RUSSO, F.TIMPONE*
- NUMERICAL AND EXPERIMENTAL ANALYSIS OF VARIABLE VANES PUMPS  
*F.FRENDO, R.SQUARCINI*

## **C1 – CONTACT PROBLEMS**

- THE EVOLUTION OF ELASTIC-PLASTIC SPHERICAL CONTACT FOR DIFFERENT CONTACT CONDITIONS  
*V. BRIZMER, Y. ZAIT, I. ETSION, Y. KLIGERMAN*
- EFFECT OF REAL CONTACT GEOMETRY ON ADHESION  
*M. VARENBERG, A. PERESSADKO, S. GORB, E. ARZT*
- CONTACT WHEEL-RAIL INVESTIGATION FOR NUMERICAL INTEGRATION OF TRAIN MOTION DYNAMIC EQUATIONS  
*S.PAPINI, E. MELI, M. MALVEZZI, L.PUGI*
- A COMPLIANT MEASURING SYSTEM FOR REVOLUTE JOINTS WITH CLEARANCE  
*A.TASORA, E.PRATI, M.SILVESTRI*
- SCRATCH TESTS  
*R.BASSANI, E.CIULLI, R. VALLEGGI, C. DI CESARE*
- NANOSCRATCHING AND NANOINDENTATION ON METAL COATINGS BY ATOMIC FORCE MICROSCOPY  
*M. ALLEGRINI, R. BASSANI, R. SOLARO, M. ALDERIGHI, C. DI CESARE*

## **D1 – SEALS**

- MODELLING OF STEAM WHIRL EXCITATION AND EVALUATION OF STABILITY MARGIN  
*N. BACHSCHMID, A. VANIA, P. PENNACCHI, E.TANZI*
- STIFFNESS AND EFFICIENCY OPTIMIZATION OF A HYDROSTATIC LASER SURFACE TEXTURED GAS SEAL  
*Y. FELDMAN, Y. KLIGERMAN, I. ETSION*
- ELASTOHYDRODYNAMIC MODEL OF A RECIPROCATING HYDRAULIC ROD SEAL  
*R.F.SALANT, N.MASER, B.YANG*
- FRICTION BEHAVIOUR OF RECIPROCATING SEALS  
*M.KANETA, S.TOGAMI, H.NISHIKAWA, Y.KANZAKI*
- RADIAL LIP SEALS EFFICIENCY UNDER DYNAMIC OPERATING CONDITIONS  
*M.SILVESTRI, E.PRATI, A.TASORA*

## **E1 – FRICTION AND WEAR**

- WEAR PREDICTION OF CERAMICS  
*YU.N.DROZDOV, S.D.IVANOV, T.M.SAVINOVA*
- TRIBOLOGICAL PROPERTIES OF THE NANOSTRUCTURAL ELECTROPLATED COMPOSITE COATINGS  
*B. SZEPTYCKA, J. SENATORSKI*
- IMPACT OF SURFACE PATTERNING ON THE TRIBOLOGICAL PROPERTIES OF NITRIDE STEEL FOR AUTOMOTIVE APPLICATIONS  
*S.VALERI, E.GUALTIERI, D.MARCHETTO, A.BORGHI, L.MORETTI*
- EROSION BEHAVIOUR OF HARDFACED AISI 1020 STEEL  
*M.BAKI KARAMIS AND K.YILDIZLI*
- DRY SLIDING WEAR BEHAVIOUR OF SiC PARTICLE REINFORCED AA2618 COMPOSITES  
*H.MINDIVAN, E.S.KAYALI, H.CIMENOGLU*

## **F1 – FRICTION AND WEAR**

- WEAR PREVENTION BY PHOSPHORUS SPECIES THAT FORM THIN TRIBOFILMS  
*M.T. DEVLIN, T.T. TURNER, J. MILNER, C. HEWETTE, R. SHEETS, H. RYAN, T-C.JAO*
- THE INFLUENCE OF VEHICLE PARAMETERS ON TYRE WEAR  
*F.BRAGHIN, F.CHELI, S.MELZI, F.RESTA*
- MEASUREMENT OF CONTACT PRESSURE IN PNEUMATIC ACTUATOR SEALS  
*M.CONTE, A.MANUELLO, L.MAZZA, C.VISCONTE*
- RUNING-IN BEHAVIOUR OF RAIL AND WHEEL CONTACTING SURFACES  
*J.LUNDMARK, E.HOGLUND, B.PRAKASH*
- THE PREDICTIVE MAINTENANCE PROCESS IN THE MODERN INDUSTRY: BEARING ANALYSIS IN MACHINES  
*L. LEMMA*

## **G1 – FRICTION AND WEAR**

- FORCED STICK-SLIP OSCILLATIONS OF TWO-DEGREE-OF-FREEDOM SYSTEMS WITH DRY-VISCOUS DISSIPATION AND TIME-DEPENDENT STATIC FRICTION  
*F. SORGE*
- HIGH TEMPERATURE WEAR BEHAVIOR OF MoN-Ag NANOCOMPOSITE COATINGS  
*K.V. EZIRMIK, A.OZTURK, M. URGEN*
- THE EFFECT OF SLIDING VELOCITY ON SIC PARTICLE REINFORCED 2618 AL MATRIX COMPOSITES  
*H.MINDIVAN, H.CIMENOGLU, E.S.KAYALI*
- EXPERIMENTAL STUDY OF VIBRATIONAL WEAR OF A SG TUBE-TO-SPASER GRID MATING UNIT FOR A FAST SODIUM-COOLED REACTOR  
*Y.DRODZOV, V.LYASHENKO, V.MAKAROV*
- THE EFFECT OF SHOT PEENING ON SURFACE INTEGRITY AND TRIBOLOGICAL BEHAVIOUR OF TOOL STEELS  
*N.M.VAXEVANIDIS, D.E.MANOLAKOS, A.KOUTSOMICHALIS, G.PETROPOULOS, A.PANAGOTAS, A.MOURLAS, S.S.ANTONIOU*

## **A2 – LUBRICATION**

- DESCRIPTION OF THE ENERGY LEVEL OF GREASE LUBRICATED CONTACTS  
*E.KUHN*
- EXPERIMENTAL INVESTIGATION ON TRANSIENT AND THERMAL EFFECTS FOR LUBRICATED NON-CONFORMAL CONTACTS  
*R.BASSANI, E.CIULLI, M.CARLI, K.STADLER*
- STEADY STATE ANALYSIS OF WORN SPHERICAL BEARING OPERATING IN TURBULENT REGIME WITH NON NEWTONIAN LUBRICANTS  
*M. FARALLI, N.P. BELFIORE*
- THE EFFECT OF SURFACE TEXTURING IN SOFT ELASTO-HYDRODYNAMIC LUBRICATION  
*A. SHINKARENKO, Y. KLIGERMAN, I. ETSION*
- INFLUENCE OF PLASTIC DEFORMATION MODELS IN FULL-FILM LUBRICATION OF STRIP ROLLING  
*M.MALVEZZI, M.C. VALIGI*

## **B2 – LUBRICATION**

- NUMERICAL ANALYSIS ON THE SUPPLY HOLE DISCHARGE COEFFICIENT IN AEROSTATIC BEARINGS  
*G.BELFORTE, T.RAPARELLI, A.TRIVELLA, V.VIKTOROV, C.VISCONTE*
- A THEORETICAL STUDY OF A HIGH SPEED ROTOR SUPPORTED BY AIR BEARINGS MOUNTED ON O-RINGS  
*G.BELFORTE, T.RAPARELLI, V.VIKTOROV, F.COLOMBO*
- THE INFLUENCE QUALITY OF MOTOR OIL ON PETROL ENGINES  
*D.NESTOROVIC, D.STOJILJKOVIC, Z.VUKADINOVIC*
- EXPLOITATIONS TESTING OF THE MOTOR OIL FOR THE SAKE OF CONSOLIDATION CHANGE PERIOD  
*D.NESTOROVIC, B.NEDELJKOVIC*
- OPTIMIZED EHL PISTON DYNAMICS COMPUTER CODE  
*V. D'AGOSTINO, D. GUIDA, A. RUGGIERO, C. RUSSO*

## **C2 – LUBRICATION**

- A THEORETICAL ANALYSIS FOR FRICTION LOSSES MINIMIZATION IN PISTON OIL RING  
*V. D'AGOSTINO, P. MARESCA, A. SENATORE*
- THD ANALYSIS OF A COUPLED JOURNAL AND TILTING PAD THRUST BEARING SYSTEM  
*F.STEFANI*
- TRIBOLOGICAL PROPERTIES AND LUBRICATION MECHANISM OF INORGANIC FULLERENE-LIKE WS<sub>2</sub> PARTICLES  
*F. DASSENOY, L. JOLY-POTTUZ, M. BELIN, J.M. MARTIN, G. MONTAGNAC, B. REYNARD*
- THE INFLUENCE OF LUBRICANTS ON THE MECHANICAL LOSSES REDUCTION OF GEARBOX  
*Z.VUKADINOVIC, D.JOSIFOVIC, J. VIZITIN, B.KRZAN*
- A STUDY OF MAGNETIC FLUID BASED SQUEEZE FILM BETWEEN INFINITELY LONG RECTANGULAR PLATES AND EFFECT OF SURFACE ROUGHNESS  
*G.M.DEHERI, H.C.PATEL, RAKESH M.PATEL*

## **D2 – SIMULATION**

- NONLINEAR DYNAMICS OF A DRIVEN, UNDERDAMPED CHAIN: EFFECTS OF DISORDER AND TEMPERATURE  
*R. GUERRA, A. VANOSSI, M. FERRARIO*
- A NUMERICAL MODEL FOR EVALUATING SEAL FRICTION EFFECTS ON AUTOMOTIVE DRIVELINE PERFORMANCES  
*E. GALVAGNO, A. VIGLIANI*
- A MATHEMATICAL MODEL FOR GAS BUBBLES COLLAPSE IN OIL GEROTOR-TYPE PUMPS  
*G. ARGENTINI*
- NUMERICAL MODELS FOR TYRES SIMULATION  
*A. SORNIOTTI, A. VIGLIANI*
- ELASTO-HYDRODYNAMIC JOURNAL BEARING MODEL WITH PRESSURE, TEMPERATURE AND SHEAR RATE DEPENDENT VISCOSITY  
*V. CAIKA, S. BUKOVNIK, W.J. BARTZ*
- INFLUENCE OF THE LUBRICATED JOINT MODEL ON THE DYNAMIC RESPONSE OF MULTIBODY SYSTEMS  
*P. FLORES, J.C.P. CLARO, J. AMBROSIO, H.M. LANKARANI*

## **E2 – MISCELLANEOUS**

- MAXIMUM OIL FILM TEMPERATURE OF HIGH SPEED JOURNAL BEARING WITH VARIABLE AXIAL CROSS SECTION  
*S.M. GHONEAM, S. STRZELECKI*
- FILM THICKNESS MEASUREMENT USING WHITE LIGHT SPACER INTERFEROMETRY AND ITS CALIBRATION BY HSV COLOR SPACE  
*M. EGUCHI, T. YAMAMOTO*
- ON-LINE USED OIL DEBRIS AND CONTAMINATION MONITORING SENSOR DEVELOPMENT  
*SURAPOL RAADNUJ*
- A RATIONAL HUMAN JOINT FRICTION TEST USING A HUMAN CARTILAGE-ON-CARTILAGE ARRANGEMENT  
*Y. MERKHER, S. SIVAN, I. ETSION, A. MAROUDAS, G. HALPERIN, A. YOSEF*

## **F2 – COATING AND TREATMENTS**

- TRIBOLOGY IN CUTTING PROCESS AND COMPARISON BETWEEN "PIN-ON-DISC" AND CUTTING TEST  
*J. HAJEK, A. KRIZ*
- CHROMIUM COATINGS FOR PISTON RINGS  
*P. BENES, M. SOSNOVA*
- ADDITIVE REACTION MECHANISMS ON COATING SURFACE  
*J. VIZINTIN, M. KALIN, E. ROMAN*
- EROSION RATE OF STAINLESS STEEL DUE TO OF THE IMPACT OF SOLID PARTICLES  
*D. AQUARO*
- FRICTION AND WEAR BEHAVIOUR OF PEO- AND PVD-COATED Ti-6Al-4V AGAINST HARD Cr AND PS-Al<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub>  
*L. CESCHINI, E. LANZONI, C. MARTINI, D. PRANDSTRALLER, G. SAMBOGNA*
- BEHAVIOUR TO ABRASIVE WEAR OF ENAMELLED EXTRA LOW-CARBON STEEL  
*G. PALOMBARINI, D. BPRANDSTRALLER, L. ROSSETTI, S. TIBERI VIPRAIO, A. ZUCHELLI*

## **G2 – COATING AND TREATMENTS; NANOTRIBOLOGY**

- MODIFICATIONS OF TRIBOLOGICAL BEHAVIOUR OF STEELS BY DUPLEX TREATMENTS  
*R. J. RODRIGUEZ, J.A. GARCIA, R. MARTINEZ, G. G. FUENTES*
- INFLUENCE ON THERMOCHEMICAL TREATMENT ON TRIBOCORROSIONAL WEAR RESISTANCE OF STEELS  
*JAN SENATORSKI, BARBARA SIERPACKA*
- TRIBOLOGICAL PROPERTIES OF CARBIDE LAYERS PRODUCED IN VACUUM CHROMIZING PROCESS  
*EWA KASPRZYCKA, JAN SENATORSKI*
- TRIBOLOGICAL PROPERTIES OF DUPLEX LAYERS PRODUCED IN VACUUM CHROMIZING PROCESS TOGETHER WITH GALVANIC TREATMENT  
*EWA KASPRZYCKA, JAN SENATORSKI, BOGDAN BOGDANSKI*
- NEW NET-LAB SUP&RMAN AND FIRST RESULTS IN NANOTRIBOLOGY  
*S. VALERI, D. MARCHETTO, A. ROTA, A. VANOSSI, G.C. GAZZADI*
- TRIBOLOGICAL PROPERTIES OF SOLID LUBRICANT NANOCOMPOSITE COATINGS ON BASE OF MOLYBDENUM DISULFIDE NANOPARTICLES  
*F. ILIE, C. TITA*