
BIBLIOGRAPHY / REFERENCES

Bibliography / References

A

Abd El-Tawwab, A.M. and Crolla, D.A., 1996, **An Experimental and Theoretical Study of a Switchable Damper**, SAE Technical Paper 960937, Society of Automotive Engineers, Warrendale, 1996.

Abd El-Tawwab, 1997, **Twin-Accumulator Suspension System**, SAE Technical Paper 970384, Reprinted from Steering and Suspension Technology, SP-1223, Society of Automotive Engineers, Warrendale, 1997, pp. 257-264.

Alanoly, J. and Sankar, S., 1987, **A New Concept in Semi-Active Vibration Isolation**, Transactions of the ASME, Volume 109, June 1987, pp. 242-247.

Alexander, D., 2003, **Cadillac SRX**, Automotive Engineering International, November 2003, pp. 58-61.

Alexander, D., 2004a, **Performance Air Suspension**, Automotive Engineering International, May 2004, p. 32.

Alexander, D., 2004b, **Global Viewpoints – North America: Chassis Integration Keeps Rubber on the Road**, Automotive Engineering International, May 2004, p. 32.

Anon., 1998, **High performance hydraulic cartridge valves and manifold systems**, HydraForce catalog 1998/99.

Anon, 2002, **Getting Started Using ADAMS/View, Version 12**, Mechanical Dynamics.

Anon, 2004, **ZF Sachs Goes Mainstream with Active Damping**, Automotive Engineering International, December 2004, p. 44.

Anon, 2005a, **Active suspension Iltis**, http://www.suffield.drdc-rddc.gc.ca/ResearchTech/Products/MilEng_Products/RD95010/index_e.html, accessed on 11 August 2005.

Anon, 2005b, **The Bose Suspension System- Resolving the conflict between Comfort and control**, http://www.bose.com/controller?event=VIEW_STATIC_PAGE_EVENT&url=/learning/project_sound/suspension_challenge.jsp.

Anon, 2005c, www.stonehydraulics.com/PickAPackframe.html , accessed on 14 May 2005.

Anon, 2005d, **Busak and Shamban Seal Catalogues**, <http://www.busakshamban.com/> accessed on 21 September 2005.

B

Besinger, F.H., Cebon, D. and Cole, D.J., 1991, **An Experimental Investigation Into the use of Semi-active Dampers on Heavy Lorries**, Proceedings of the 12th IAVSD Symposium, Lyoun, France, 26-30 August 1991.

Birch, S., 1998, **Mercedes and the “Moose Test”**, Global Viewpoints, Automotive Engineering International, April 1998, pp. 11-13.

Birch, S., Yamaguchi, J. and Demmler, A., 1990, **Tech Briefs – Concepts: Citroen’s Activa 2**, Automotive Engineering, Vol. 98, No. 12, pp. 55-56.

Birch, S., 1999, **Actively Suspended Mercedes**, Automotive Engineering International, May 1999, pp. 38-40.

Birch, S., 2001a, **Global Viewpoints – Europe embraces the AT-factor: Land Rover introducing new technologies through Range Rover**, Automotive Engineering International, June 2001, pp. 58-60.

Birch, S., 2002a, **Global vehicles: 2002 Paris Mondial De L’Automobile, Tech highlights**, Automotive Engineering International, November 2002, pp. 22-24.

Birch, S., 2002b, **Global vehicles: 2002 Paris Mondial De L’Automobile, Tech highlights**, Automotive Engineering International, November 2002, p. 26.

Birch, S., 2002c, **Global vehicles: Audi A8 and RS6**, Automotive Engineering International, September 2002, pp. 18-24.

Birch, S., 2003a, **Global Viewpoints – Europe: Chassis systems integration** Automotive Engineering International, June 2003, pp. 58-62.

Birch, S., 2003b, **Global vehicles: Frankfurt Motor Show concepts 2003**, Automotive Engineering International, November 2003, pp. 8-22.

Birch, S., 2003c, **Automotive Manufacturing: Aluminium and the XJ**, Automotive Engineering International, April 2003, pp. 97-100.

Birch, S., 2003d, **Global vehicles: Geneva Motor Show technical highlights**, Automotive Engineering International, May 2003, pp. 10-23.

Birch, S., 2004a, **Global vehicles: Audi Makes A6 Sportier**, Automotive Engineering International, July 2004, p. 14.

Birch, S., 2004b, **Global vehicles: Mercedes-Benz CVT for new A-Class**, Automotive Engineering International, September 2004, pp. 13-16.

Böcker, M. and Neuking, R., 2001, **Development of TRW's Active Roll Control**, 16th European Mechanical Dynamics User's Conference, 14-15 November 2001, Berchtesgaden, Germany,
http://www.mscsoftware.com/support/library/conf/adams/euro/2001/proceedings/papers/pdf/Paper_6.pdf accessed on 18 May 2005 at 14:50.

British Standards Institution, 1987, **British Standard Guide to Measurement and Evaluation of Human Exposure to Whole Body Mechanical Vibration and Repeated Shock**, BS 6841, 1987.

Broge, J.L., 1999, **Interactive Vehicle Dynamics**, Automotive Engineering International, December 1999, pp. 47.

Buchholz, K., 2003a, **Another smart truck for the U.S. Army**, Automotive Engineering International, April 2003, pp. 14-15.

Buchholz, K., 2003b, **Sachs levels at the curbside**, Automotive Engineering International, December 2003, pp. 37-38.

Buchholz, K., 2003c, **Global Viewpoints – North America: Body and chassis developments**, Automotive Engineering International, May 2003, pp. 65-70.

Buckner, G.D., Schuetze, K.T. and Beno, J.H., 2000, **Active vehicle suspension control using intelligent feedback linearization**, Proceedings of the American Control Conference, Chicago, Illinois, June 2002, pp. 4014-4018.

C

Carney, D., 2003a, **Ferrari 360 takes up challenge**, Automotive Engineering International, October 2003, p.12.

Carney, D., 2003b, **Maserati Coupe and Spyder evolve**, Automotive Engineering International, October 2003, p.14.

Carney, D., 2004b, **New Vehicle Technology Highlights: Grand Ride for Grand Cherokee**, Automotive Engineering International, November 2004, pp. 54-60.

Cebon, D., (1999), **Handbook of Vehicle-Road Interaction**, 629.231CEBON, ISBN 9026515545, Swets and Zeitlinger.

Choi, S.B., Lee, H.K. and Chang, E.G., 2001, **Field results of a semi-active ER suspension system associated with skyhook controller**, *Mechatronics* Vol. 11, pp. 345-353.

Chou, J.-H., Chen, S.-H. and Lee, F.-Z., 1998, **Grey-Fuzzy Control for Active Suspension Design**, *International Journal of Vehicle Design*, Volume 19, Number 1, 1998, pp. 65-77.

Cooper, H.W. and Goldfrank, J.C., 1967, **B-W-R constants and new correlations**, *Hydrocarbon Processing*, Vol. 46, No. 12, December 1967, pp. 141-146.

Crolla, D.A., Chen, D.C., Whitehead, J.P. and Alstead, C.J., 1998, **Vehicle Handling Assessment Using a Combined Subjective-Objective Approach**, SAE Technical Paper No. 980226.

Crolla, D.A. and Abdel-Hady, M.B.A., 1991, **Semi-Active Suspension Control for a Full Vehicle Model**, SAE Technical Paper 911904, Society of Automotive Engineers, Warrendale, 1991.

D

Dahlberg, E., 2000, **A Method Determining the Dynamic Roll over Threshold of Commercial Vehicles**, SAE paper 2000-01-3492.

Darling, J. and Hickson, H.R., 1998, **An experimental study of a prototype active anti-roll suspension system**, *Vehicle System Dynamics*, 29 (1998), pp. 309-329.

Data, S. and Frigero, F., 2002, **Objective evaluation of handling quality**, Proceedings of the Institution of Mechanical Engineers, Vol. 216, Part D, *Journal of Automobile Engineering*, pp. 297-305.

Decker, H., Schramm, W. and Kallenbach, R., 1988, **A practical approach towards advanced semi-active suspension systems**, *IMEchE*, 1988, C430/88.

De Wet, G.J., 2000, **Semi-aktiewe voertuigdemper: Modelling en eksperimentele bevestiging van solenoïde klep, "Semi-active vehicle damper: modelling and experimental verification of solenoid valve"**, Unpublished final year project, Department of Mechanical and Aeronautical Engineering, University of Pretoria.

E

Eberle, W.R. and Steele, M.M., 1975, **Investigation of Fluidically Controlled Suspension Systems for Tracked Vehicles – Final Report**, Technical Report No. 12072, TACOM Mobility Systems Laboratory, US Army Tank Automotive Command, Warren, Michigan, September 1975.

ElBeheiry, E.M., Karnopp, D.C., Elaraby, M.E. and Abdelraaouf, A.M., 1995a, **Advanced Ground Vehicle Suspension Systems - A Classified Bibliography**, Vehicle System Dynamics, Volume 24, Number 3, April 1995, pp. 231-258, Swets and Zeitlinger.
El Gindy, M. and Mikulcik, E.C., 1993, **Sensitivity of a Vehicle's Yaw Rate Response: Application to a Three-axle Truck**, International Journal of Vehicle Design, Vol. 14, no. 4, pp. 325-352.

EL Gindy, M. and Ilosvai, L., 1983, **Computer simulation study on a vehicle's directional response in some severe manoeuvres. Part 2: Steering and braking manoeuvres**, International Journal of Vehicle Dynamics, Vol. 4, No. 5, pp. 501-510.

El Gindy, M. and Mikulcik, E.C., 1993, **Sensitivity of a vehicle's yaw rate response: application to a three-axle truck**, International Journal of Vehicle Design, Vol. 14, No. 4, pp. 325-352.

Els, P.S., 1993, **Die Hitteprobleem op Hidropneumatiiese Veer-en-Demperstelsels "The overheating problem on hydropneumatic spring-damper systems"**, Unpublished M.Eng Dissertation, Department of Mechanical and Aeronautical Engineering, University of Pretoria, South Africa.

Els, P.S. and Grobbelaar, B., 1993, **Investigation of the Time- and Temperature Dependency of Hydropneumatic Suspension Systems**, SAE Technical Paper Series no. 930265, Published in Vehicle Suspension and Steering Systems, SAE Special Publication SP-256, 1993, pp. 55-65.

Els, P.S. and Grobbelaar, B., 1999, **Heat Transfer Effects on Hydropneumatic Suspension Systems**, Journal of Terramechanics, Vol. 36, pp. 197-205.

Els, P.S. and Holman, T.J., 1999, **Semi-Active Rotary Damper for a Heavy Off-Road Wheeled Vehicle**, Journal of Terramechanics, Volume 36, 1999, pp. 51-60.

Els, P.S. and Van Niekerk, J.L., 1999, **Dynamic Modelling of an Off-Road Vehicle for the Design of a Semi-Active, Hydropneumatic Spring-Damper System**, Proceedings of the 16th International Association for Vehicle System Dynamics (IAVSD) Symposium: Dynamics of Vehicles on roads and Tracks, Pretoria, South Africa, August 30 to September 3, 1999.

Els, P.S., and Uys, P.E., 2003, **Investigation Of The Applicability Of The Dynamic-Q Optimisation Algorithm To Vehicle Suspension Design**, Mathematical and Computer Modeling, Vol. 37, pp. 1029-1046.

Els, P.S., 2005, **The Applicability of Ride Comfort Standards to Off-Road Vehicles**, Journal of Terramechanics, Vol. 42, pp. 47-64.

Els, P.S., Uys, P.E., Snyman, J.A. and Thoresson, M.J., 2003, **Obtaining Vehicle Spring and Damper Characteristics for Improved Ride Comfort and Handling, Using Mathematical Optimisation**, 18th IAVSD Symposium, Dynamics of Vehicles on Roads and Tracks, Extensive Summaries, IAVSD 2003, August 24-30, Kanagawa Institute of Technology, Japan.

Esmailzadeh, E., 1979, **Servo-valve-controlled Pneumatic Suspensions**, Journal of Mechanical Engineering Science, Vol. 21, No. 1.

F

Fodor, M. and Redfield, R.C., 1996, **Experimental Verification of Resistance Control, Semi-Active Damping**, Vehicle System Dynamics, Volume 26, Number 2, August 1996, pp. 143-159, Swets and Zeitlinger.

Forkenbrock, G.J. and Garrot, W. R., 2001, **Light Vehicle Dynamic Roll over Propensity Phases IV, V and VI**, NHTSA Power Point Presentation, NHTSA 2001-01-0128, http://www-nrd.nhtsa.dot.gov/pdf/nrd-01/SAE/SAE2002/RGarrott_rollover.pdf, accessed on 18 May 2005, 16:40.

G

Garrot, W.R., Howe, J.G. and Forkenbrock, G., 2001, **Results from NHTSA's experimental examination of selected manoeuvres that may induce on road untripped light vehicle rollover**, NHTSA 2001-01-0131.

Gehm, R., 2003, **Chrysler Pacifica**, Automotive Engineering International, October 2003, p. 62-64.

Gehm, R., 2004, **Tech Briefs – ZF Sachs goes mainstream with active damping**, Automotive Engineering International, June 2004, p. 20-22.

Ghazi Zadeh, A., Fahim, A. and El-Gindy, M., 1997, **Neural Network and Fuzzy Logic Applications to Vehicle Systems: Literature Survey**, International Journal of Vehicle Design, Volume 18, Number 2, 1997, ISSN 0143-3369.

Giliomee, C.L. and Els, P.S., 1998, **Semi-Active Hydropneumatic Spring and Damper System**, Journal of Terramechanics, Volume 35, 1998, pp. 109-117.

Giliomee, C.L., Els, P.S. and Van Niekerk, J.L., 2005, **Anelastic Model of a Twin Accumulator Hydro-pneumatic Suspension System**, R&D Journal, South African Institution of Mechanical Engineering, Vol. 21, No. 2, July 2005.

Gillespie, T.D., 1992, **Fundamentals of Vehicle Dynamics**, Society of Automotive Engineers, Inc., Warrendale, PA.

H

Hall, B.B. and Gill, K.F., 1987, **Performance Evaluation of Motor Vehicle Active Suspensions Systems**, Proceedings of the Institution of Mechanical Engineers, Volume 201, Number D2, IMechE, 1987.

Hamilton, J.M., 1985, **Computer-Optimized Adaptive Suspension Technology (COAST)**, IEEE Transactions on Industrial Electronics, Volume IE-32, No 4, November 1985, pp. 355-363.

Harada, H., 1997, **Stability criteria of a driver-vehicle system and objective evaluation of vehicle handling performance**, International Journal of vehicle Design, Vol. 18, No. 6., pp. 597-615.

Harty, D., 2003, **Branding vehicle dynamics**, Automotive Engineering International, July 2003, pp. 53-60.

Harty, D., 2005, **A review of dynamic intervention technologies and a method to choose between them**, Vehicle Dynamics Expo 2005, Open Technology Forum, 31 May - 2 June 2005, Stuttgart Messe, Stuttgart, Germany.

Hashiyama, T., Furuhashi, T. and Uchikawa, Y. 1995, **A Study on Finding Fuzzy Rules for Semi-Active Suspension Controllers with Genetic Algorithm**, In Proc. Second IEEE Conference on Evolutionary Computation (EC-IEEE'95), volume 1, pages 279-282. Perth

Hedrick, J.K., Rajamani, R. and Yi, K., 1994, **Observer Design for Electronic Suspension Applications**, Vehicle System Dynamics, Volume 23, Number 6, September 1994.

Hedrick, J.K. and Wormley, D.N., 1975, **Active Suspensions for Ground Transport Vehicles - A State of the Art Review**, Mechanics of Transportation Suspension Systems, ASME AMD, Volume 15, 1975, pp. 21-40.

Hennecke, D. and Zieglmeier, F.J., 1988, **Frequency Dependent Variable Suspension Damping - Theoretical Background and Practical Success**, IMechE, 1988, C431/88, pp. 101-111.

Hine, P.J. and Pearce, P.T., 1988, **A Practical Intelligent Damping System**, IMechE, 1988, C436/88, pp. 141-147.

Hirose, M., Matsushige, S., Buma, S. and Kamiya, K., 1988, **Toyota Electronic Modulated Suspension System for the 1986 Soarer**, IEEE Transactions on Industrial Electronics, Volume 35, Number 2, May 1988.

Hohl, G.H., 1984, **Ride Comfort of Off-Road Vehicles**, In Proceedings of the 8th International Conference of the ISTVS, Vol. I of III, Cambridge, England, August 5-11, 1984.

Holdmann, P. and Holle, M., 1999, **Possibilities to improve the ride and handling performance of delivery trucks by modern mechatronic systems**, JSAE Review, Vol. 20, pp. 505-510.

Holscher, R. and Huang, Z., 1991, **Das komfortorientierte semiaktive dampfungssystem**, Aktive Fahrwerkstechnik, Fortschritte der Fahrzeugtechnik 10, Vieweg and Sohn Verlagsgesellschaft, Braunschweig.

Horiuchi, S., Yuhara, N. and Takeda, H., 1989, **Identification of driver/vehicle multiloop properties for handling quality evaluation**, 11th IAVSD Symposium, 21-25 Aug 1989, Supplement to Vehicle System Dynamics, Vol. 18.

Hrovat, D., 1997, **Survey of Advanced Suspension Developments and Related Optimal Control Applications** Automatica, Vol 33, No. 10, pp. 1781-1817, Elsevier Science.

Hrovat D. and Margolis, D.L., 1981, **An Experimental Comparison Between Semi-Active and Passive Suspensions for Air-Cushion Vehicles**, International Journal of Vehicle Design, Volume 2, Number 3, 1981, pp. 308-321.

I

Ikenaga, S., Lewis, F.L., Campos, J. and Davis, L., 2000, **Active Suspension Control of Ground Vehicle Based on Full-Vehicle Model**, Proceedings of the American Control Conference, Chicago, Illinois, June 2000, pp. 4019-4024.

International Standards Organisation, 1982, **International Standard ISO 4138: Road vehicles – Steady state circular test procedure**, ISO 7401:1988(E).

International Standards Organisation, 1988, **International Standard ISO 7401: Road vehicles – Lateral transient response test methods**, ISO 7401:1988(E).

International Standards Organisation, 1995, **International Standard ISO 8608: Mechanical vibration – Road surface profiles – Reporting of measured data**, ISO 8608:1995(E).

International Standards Organisation, 1997, **Mechanical Vibration and Shock - Evaluation of Human Exposure to Whole-Body Vibration, Part 1: General Requirements**, ISO 2631-1, Second Edition, The International Organisation for Standardisation, 15 July 1997.

International Standards Organisation, 1999, **International Standard ISO 3888-1: Passenger cars – Test track for a severe lane-change manoeuvre – Part 1: Double lane-change**, ISO 3888-1:1999(E).

International Standards Organisation, 2002, **International Standard ISO 3888-2: Passenger cars – Test track for a severe lane-change manoeuvre – Part 2: Obstacle avoidance**, ISO 3888-2:2002(E).

Ivers, D.E. and Miller, L.R., 1989, **Experimental Comparison of Passive, Semi-Active On/Off, and Semi-Active Continuous Suspensions**, SAE Technical Paper 892484, Society of Automotive Engineers, Warrendale, 1989. (Reprinted from “Advanced Truck Suspensions”, SP-802).

J

Janse van Rensburg, N., Steyn, J.L. and Els, P.S., 2002, **Time delay in a semi-active damper: modeling the bypass valve**, Journal of Terramechanics, Volume 39, 2002, pp. 35-45.

Jolly, M.R. and Miller, L.R., 1989, **The Control of Semi-Active Dampers Using Relative Feedback Systems**, SAE Technical Paper 892483, Society of Automotive Engineers, Warrendale, 1989. (Reprinted from “Advanced Truck Suspensions”, SP-802)

Jost, K., 2002a, **Continental gives Phaeton a lift**, Automotive Engineering International, November 2002, p. 49.

Jost, K., 2002b, **Top technologies of the year: Delphi improves Cadillac’s ride**, Automotive Engineering International, December 2002, p. 40.

Jost, K., 2004, **Segment firsts for Opel Astra**, Automotive Engineering International, January 2004, p. 12.

Jost, K., 2005, **Audi Allroad Quattro**, Automotive Engineering International, February 2005, p. 28-30.

K

Karnopp, D., 1968, **Applications of Random Process Theory to the Design and Testing of Ground Vehicles**, Transportation Research, Vol. 2, pp. 269-278, Pergamon Press.

Karnopp, D.C., Crosby, M.J. and Harwood, R.A., 1973, **Vibration Control using Semi-active Force Generators**, ASME paper 73-DET-122.

Karnopp, D., 1983, **Active Damping in Road Vehicle Suspension Systems**, Vehicle System Dynamics, Volume 12, 1983, pp. 291-316.

Karnopp, D., 1990, **Design Principles for Vibration Control Systems Using Semi-Active Dampers**, Transactions of the ASME, Volume 112, September 1990, pp. 448-455.

Karnopp, D. and Margolis, D., 1984, **Adaptive Suspension Concepts for Road Vehicles**, Vehicle System Dynamics, Volume 13, 1984, pp. 145-160.

Karnopp, D., Crosby, M.J. and Harwood, R.A., 1974, **Vibration Control Using Semiactive Force Generators**, ASME Journal of Engineering for Industry, Vol. 98, pp. 914-918.

Kelly, K., 2001, **Spyder of a different stripe – Maserati’s ragtop lives up to its Italian heritage**, Ward’s Autoworld, December 2001, pp. 65-66.

Kizu, R., Saito, R., Matsumura, S. and Yokoya, Y., 1989, **Technical Note: Suspension Technology capable of reconciling handling stability and ride comfort**, International Journal of Vehicle Design, Vol. 10, No. 4, pp. 497-501.

Kim, H-J. and Park, Y-P., 2004, **Investigation of robust roll motion control considering varying speed and actuator dynamics**, Mechatronics, Vol. 14, pp. 35-54.

Kornhuaser, A.A., 1994, **Dynamic modelling of gas springs**, Transactions of the ASME, Vol. 116, September 1994. pp. 414-418.

Kojima, H., Nakano, J., Nakayama, H., Kawashima, N. and Fujimoto, H., 1991, **Development of Toyota Electronic Modulated Suspension - Two Concepts for Semi-Active Suspension Control**, SAE Technical Paper 911900, Society of Automotive Engineers, Warrendale, 1991. (Reprinted from "Car Suspension Systems and Vehicle Dynamics", SP-878).

Krasnicki, E.J., 1981, **The Experimental Performance of an "On-Off" Active Damper**, Shock and Vibration Bulletin, Number 50, May 1981, pp. 125-131.

L

Lieh, J., 1996, **Development of Active Suspensions Using Velocity Feedback**, SAE Technical Paper 960935, Society of Automotive Engineers, Warrendale, 1995. (Reprinted from "Suspension and Steering Technology", SP-1136).

Lizell, M., 1988, **Semi-Active Damping**, IMechE, 1988, C429/88, pp. 83-91.

Lord Corporation, 2005, **Magneto-Rheological (MR) Technology**, <http://www.lord.com/defaultt.aspx?tabid=762&pid=3> accessed on 23 May 2005.

M

Margolis, D.L., 1982a, **The Response of Active and Semi-Active Suspensions to Realistic Feedback Signals**, Vehicle System Dynamics, Volume 11, Number 5-6, December 1982.

Margolis, D.L., 1982b, **Semi-Active Heave and Pitch Control for Ground Vehicles**, Vehicle System Dynamics, Volume 11, Number 1, February 1982.

Masato, A., 1989, **Handling characteristics of four-wheel active steering vehicles over full manoeuvring range of lateral and longitudinal accelerations**, 11th IAVSD Symposium, 21-25 Aug 1989, Supplement to Vehicle System Dynamics, Vol. 18.

Mayne, E., 2002, **Land Rover Innovation Goes From Paper to Practice**, www.wardsauto.com, accessed on 08 Jan 2002 at 07:53.

Miller, L.R., 1988a, **The Effect of Hardware Limitations on an On/Off Semi-Active Suspension**, IMechE Paper number C442/88, 1988, pp. 199-206.

Miller, L.R., 1988b, **Tuning Passive, Semi-Active and Fully Active Suspension Systems**, Proceedings of the 27th Conference on Decision and Control, Austin, Texas, 7-9 December 1988.

Miller, L.R. and Nobles, C.M., 1988, **The Design and Development of a Semi-Active Suspension for a Military Tank**, SAE Technical Paper 881133, Society of Automotive Engineers, Warrendale, 1988.

Misselhorn, W.E., Theron, N.J. and Els, P.S., 2006, **Investigation of Hardware-in-the-Loop for use in suspension development**, Vehicle System Dynamics, Vol. 44, No.1, January 2006, pp. 65-81.

Mizuguchi, M., Chikamari, S., Suda, T. and Kobayashi, K., 1984, **Electronic Controlled Suspension (ECS)**, SAE Technical Paper 845051, Society of Automotive Engineers, Warrendale, 1984.

Murphy, R.W., 1984, **Further Development in Ride Quality**, In Proceedings of the 8th International Conference of the ISTVS, Vol I of III, Cambridge, England, August 5-11, 1984.

N

Nastasić, Ž. and Jahn, G.D., 2005, **The Citroën Technical Guide**, http://www.club_xm.com/files/citroen%20guide.pdf, Accessed on 29 April 2005.

National Highway Traffic Safety Administration, 2000, **Roll over prevention Docket No. NHTSA-2000-6859 RIN 2127-AC64**, [www.nhtsa.dot.gov/cars/rules/rulings/Roll over/Chapt03.html](http://www.nhtsa.dot.gov/cars/rules/rulings/Roll%20over/Chapt03.html). Accessed September 2002.

Nell, S., 1993, **‘n Algemene Strategie vir die Beheer van Semi-Aktiewe Dempers in ‘n Voertuigsuspensiestelsel**, “A general strategy for the control of semi-active dampers in a vehicle suspension system”, Unpublished PhD Thesis, Department of Mechanical and Aeronautical Engineering, Faculty of Engineering, University of Pretoria, November 1993.

Nell, S. and Steyn, J.L., 1994, **Experimental Evaluation of an Unsophisticated Two State Semi-Active Damper**, Journal of Terramechanics, Volume 31, Number 4, pp. 227-238, 1994, Elsevier Science Ltd.

Nell, S. and Steyn J.L., 1998, **An alternative control strategy for semi-active dampers on off-road vehicles**. Journal of Terramechanics, Vol. 35, 1998, pp 25-40.

Nell, S. and Steyn J.L., 2003, **Development and experimental evaluation of translational semi-active dampers on a high mobility off-road vehicle**. Journal of Terramechanics, Vol. 40, pp. 25-32.

O

Ouellette, J., 2005, **Smart Fluids Move into the Marketplace**, <http://www.aip.org/tip/INPHFA/vol-9/iss-6/p14.html> , accessed on 23 May 2005.

P

Palmeri, P.S., Moschetti, A. and Gortan, L., 1995, **H-Infinity Control for Lancia Thema Full Active Suspension System**, SAE Technical Paper 950583, Society of Automotive Engineers, Warrendale, 1995. (Reprinted from “New Developments in Vehicle Dynamics, Simulation, and Suspension Systems”, SP-1074).

Petek, N.K., Romstadt, D.J., Lizell, M.B. and Weyenberg, T.R., 1995, **Demonstration of an Automotive Semi-Active Suspension Using Electrorheological Fluid**, SAE Technical Paper 950586, Society of Automotive Engineers, Warrendale, 1995. (Reprinted from “New Developments in Vehicle Dynamics, Simulation, and Suspension Systems”, SP-1074).

Pinkos, A., Shtarkman, E. and Fitzgerald, T., 1993, **An Actively Damped Passenger Car Suspension System with Low Voltage Electro-Rheological Magnetic Fluid**, SAE Technical Paper 930268, Society of Automotive Engineers, Warrendale, 1993. (Reprinted from Special Publication SP-952), pp. 87-93).

Poley, R., 2005, **DSP Control of Electro-hydraulic Servo Actuators**, Texas Instruments Application Report, SPRAA76 – January 2005 from: www.eetchina.com/ARTICLES/2005MAR/PDF/2005MAR21_DSP_CTRLD_ANONLINE35.PDF, accessed on 11 January 2006.

Pollard, M.G., 1983, **Active Suspensions Enhance Ride Quality**, Railway Gazette International, November 1983.

Ponticel, P., 2002, **New magnetorheological fluids from Lord**, Automotive Engineering International, August 2002, p. 13.

Poyser, J., 1987, **Development of a Computer Controlled Suspension System**, International Journal of Vehicle Design, Volume 8, Number 1, 1987, pp. 74-86.

Pradko, F. and Lee, R.A., 1966, **Vibration Comfort Criteria**, SAE Technical Paper 660139, Society of Automotive Engineers, Warrendale.

R

Rajamani, R. and Hedrick, J.K., 1991, **Semi-Active Suspensions - A Comparison Between Theory and Experiments**, The Dynamics of Vehicles on Roads and on Tracks, Proceedings of the 12th IAVSD-Symposium held in Lyon, France, 26-30 August 1991, Supplement to Vehicle System Dynamics, Volume 20, Swets & Zeitlinger.

Rakheja, S. and Sankar, S., 1985, **Vibration and Shock Isolation Performance of a Semi-Active “On-Off” Damper**, Transactions of the ASME, Volume 107, October 1985, pp. 398-403.

Reichardt, W., 1991, **Correlation Analysis of Open/Closed Loop Data for Objective Assessment of Handling Characteristics of Cars**, SAE Technical Paper No. 910238.

S

Salemka, R.M. and Beck, R.R., 1975, **Feasibility Analysis and Evaluation of an Adaptive Tracked Vehicle Suspension and Control System**, TACOM, Technical Report Number 11893(LL-146), June 1975.

Sharp, R.S. and Crolla, D.A., 1987, **Road Vehicle Suspension System Design - A Review**, Vehicle System Dynamics, Volume 16, number 3, 1987, Swets and Zeitlinger, pp. 167-192.

Sharp, R.S. and Hassan, S.A., 1987, **Performance and Design Considerations for Dissipative Semi-Active Suspension Systems for Automobiles**, Proceedings of the IMechE, Volume 201, Number D2, 1987, pp. 149-153.

Sharp, R.S. and Pan, D., 1991, **On active control for automobiles**, 12th IAVSD Symposium, Aug 26-30, 1991, Supplement to Vehicle System Dynamics, Vol. 20.

Silani, E., Savaresi, S.M. and Bittanti, S., 2003, **Semi-active Suspensions: an Optimal Control Strategy for a Quarter-car Model**, Dipartimento di Elettronica e Informazione, Politecnico di Milano.

Simon, D.E., 2001, **An Investigation of the Effectiveness of Skyhook Suspensions for Controlling Roll Dynamics of Sport Utility Vehicles Using Magneto-Rheological Dampers**, PhD Dissertation. Virginia Polytechnic Institute and State University.

Soliman, A.M.A., Abd El-Tawwab, A.M. and Crolla, D.A., 1996a, **Adaptive Control Strategies for a Switchable Damper Suspension System**, SAE Technical Paper 960939, Society of Automotive Engineers, Warrendale, 1996. (Reprinted from “Suspension and Steering Technology”, SP-1136.

Soliman, A.M.A. and Crolla, D.A., 1996b, **Preview Control for a Semi-Active Suspension System**, International Journal of Vehicle Design, Volume 17, Number 4, 1996.

Speckhart, F.A. and Harrison, E., 1968, **The Design of a Shock Absorber to Improve Ride Comfort by Reducing Jerk**, SAE Technical Paper 680472, Society of Automotive Engineers, Warrendale, 1968.

Starkey, J.M., 1993, **The effects of vehicle design parameters on handling frequency response characteristics**, International Journal of Vehicle Design, Vol. 14, No. 5/6, pp. 497-510.

Stone, E. and Cebon, D., 2002, **A preliminary investigation of semi-active roll control**, http://www.cvdc.org/recent_papers/StoneCebon_avec02.pdf, accessed on 19 May 2005, 07:45.

T

Temple, N.L. and Hoogterp, F.B., 1992, **Semi-Active Suspension: A Mobility Enhancement for Combat Vehicles**, Proceedings of the ISTVS/FISITA 92, Seminar on Off-road Vehicles, Institution of Mechanical Engineers, London, 9-11 June 1992.

Theron, N.J. and Els, P.S., 2005, **Modelling of a Semi-active Hydropneumatic Spring-damper Unit**, Accepted for publication in International Journal of Vehicle Design (IJVD), Inderscience Publishers, 3 March 2005.

Thoreson, M.J., 2003, **Mathematical optimisation of the suspension system of an off-road vehicle for ride comfort and handling**, Unpublished M.Eng Thesis, University of Pretoria, Pretoria, South Africa.

Tomizuka, M. and Hedrick, J.K., 1995, **Advanced Control Methods for Automotive Applications**, Vehicle System Dynamics, Volume 24, 1995, pp. 449-468, Swets and Zeitlinger.

Trent, V. and Greene, M., 2002, **A Genetic Algorithms Predictor for Vehicular Rollover**, 0-7803-7474-6/02/\$17.00, IEEE, 2002

Truscott, A.J., 1994, **Composite Active Suspension for Automotive Vehicles**, Computing and Control Engineering Journal, June 1994, pp. 149-154.

Tseng, H.E. and Hedrick, J.K., 1994, **Semi-Active Control Laws - Optimal and Sub-optimal**, Vehicle System Dynamics, Volume 23, Number 7, October 1994, pp. 545-569, Swets and Zeitlinger.

U

Uffelman, F., 1983, **Automotive Stability and Handling Dynamics in Cornering and Braking Manoeuvres**, Vehicle System Dynamics, Vol. 12, pp. 203-223.

Uys, P.E., Els, P.S. and Thoreson, M.J., 2006, **Criteria for Handling Measurement**, Journal of Terramechanics, Vol. 43, pp. 43-67.

Uys, P.E., Els, P.S., Thoreson, M.J., Voigt, K.G. and Combrinck, W.C., 2005, **Experimental determination of moments of inertia for an off-road vehicle in a regular engineering laboratory**, Accepted for publication in the International Journal of Mechanical Engineering Education.

V

Vlk. F., 1985, **Handling performance of truck-trailer vehicles: A state-of-the-art-survey**, International Journal of Vehicle Design, Vol. 6, No. 3, pp. 323-361.

Voigt, K.G., 2006, **Semi-active spring and damper control for ride comfort**, Draft copy of Masters degree thesis at University of Pretoria submitted to study leaders, Prof. N.J. Theron and Mr. P.S. Els, for review.

W

Wallentowitz, H. and Holdman, P., 1997, **Hardware and Software Demands on Adjustable Shock Absorbers for Trucks and Passenger Cars**, Internet - <http://www.ika.rwth-aachen.de/vortrag/ph-hdt> accessed on 26 August 1997.

Weeks, D.A., Bresie, D.A., Beno, J.H. and Guenin, A.M., 1999, **The Design of an Electromagnetic Linear Actuator for an Active Suspension**, SAE Technical paper 1999-01-0730.

Weissler, P., 2003, **Continuously Controlled Chassis from Volvo**, Automotive Engineering International, August 2003, pp. 10-13 .

Williams, R.A., 1994, **Electronically Controlled Automotive Suspensions**, Computing and Control Engineering Journal, June 1994, pp. 143-148.

Wright, P., 2001, **Formula 1 Technology**, Society of Automotive Engineers, pp. 325-335.

Y

Yoshimura, T., Nakaminami, K. and Hino, J., 1997, **A Semi-Active Suspension with Dynamic Absorbers of Ground Vehicles Using Fuzzy Reasoning**, International Journal of Vehicle Design, Volume 18, Number 1, 1997.

Youn, I., 1991, **Optimal Preview Control Design of Active and Semi-Active Suspension Systems Including Jerk**, SAE Technical Paper 960936, Society of Automotive Engineers, Warrendale, 1991. (Reprinted from "Suspension and Steering Technology", SP-1136).



Appendix **A**

HANDLING CRITERIA

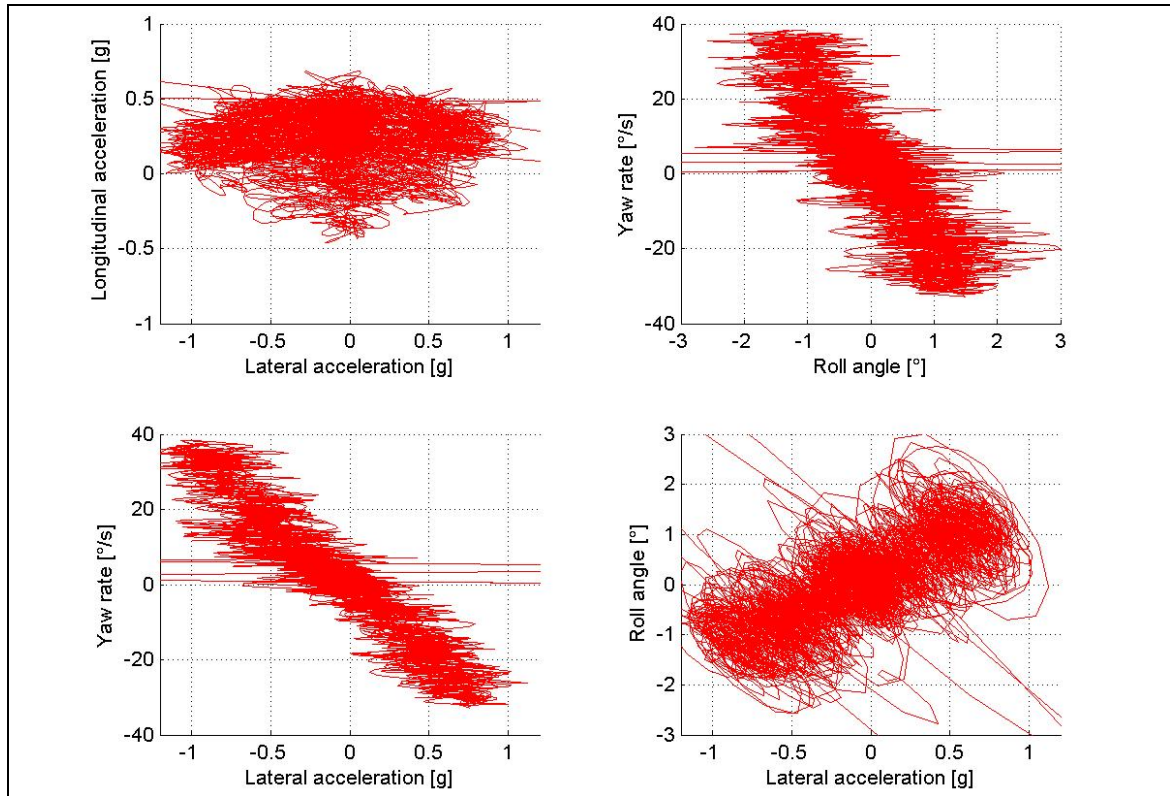


Figure A-1 - Performance related to driver A – Volkswagen Golf 4 GTI on ride and handling track

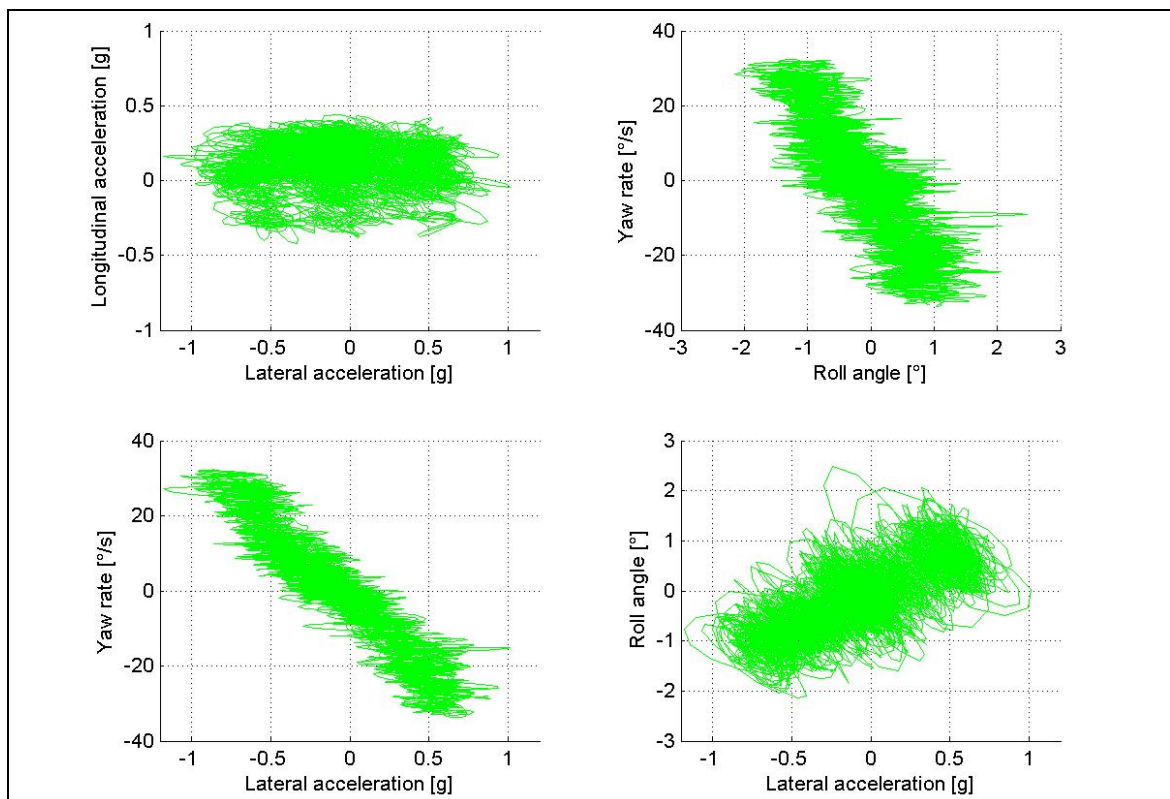


Figure A-2 - Performance related to driver B – Volkswagen Golf 4 GTI on ride and handling track

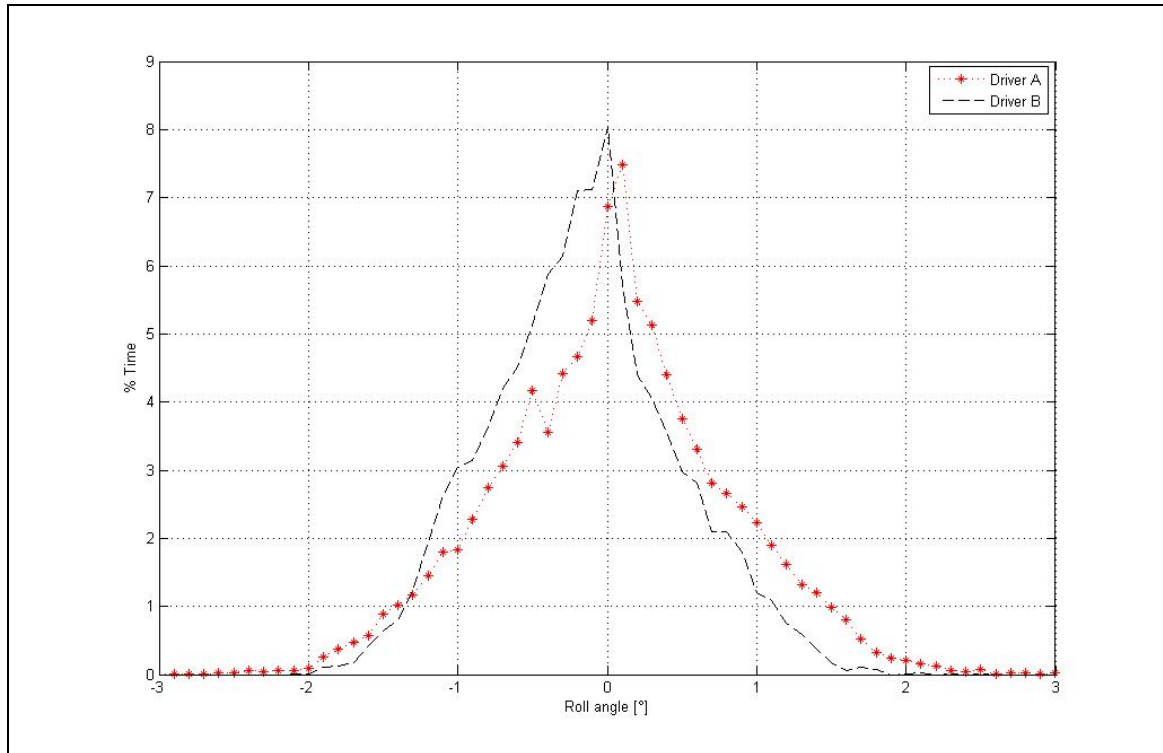


Figure A-3 - Roll angle histograms for Drivers A and B – Volkswagen Golf 4 GTI on ride and handling track

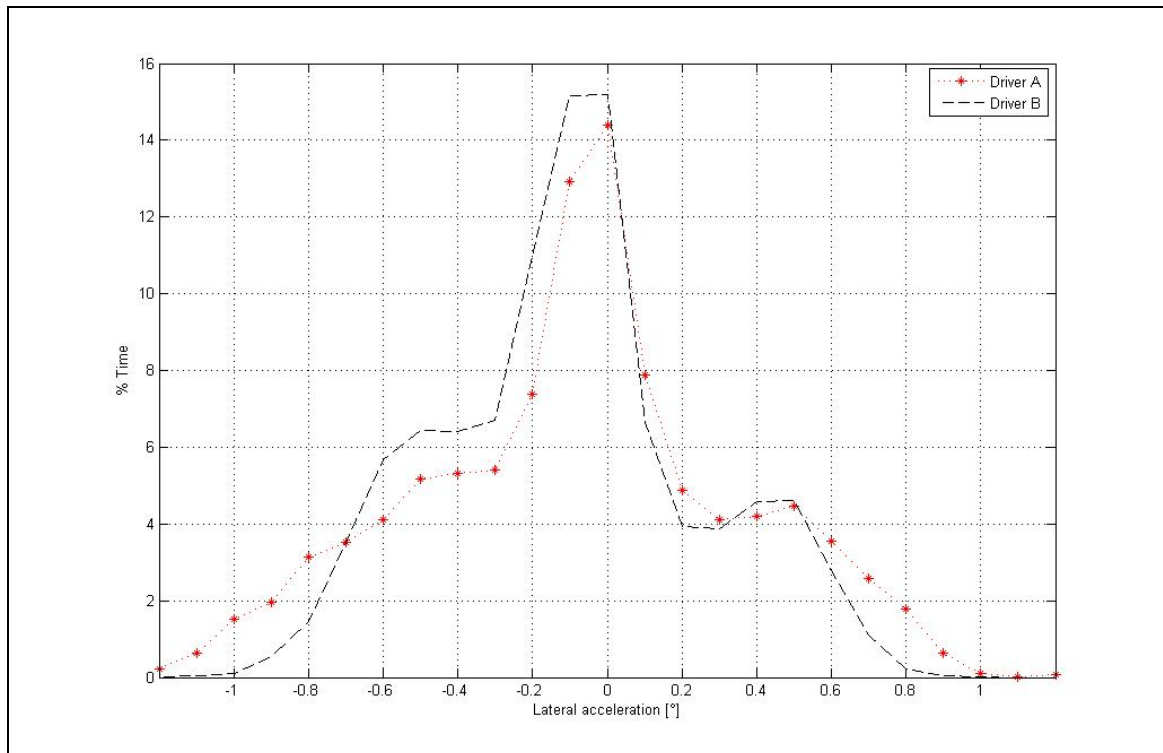


Figure A-4 - Lateral acceleration histogram for Drivers A and B – Volkswagen Golf 4 GTI on ride and handling track

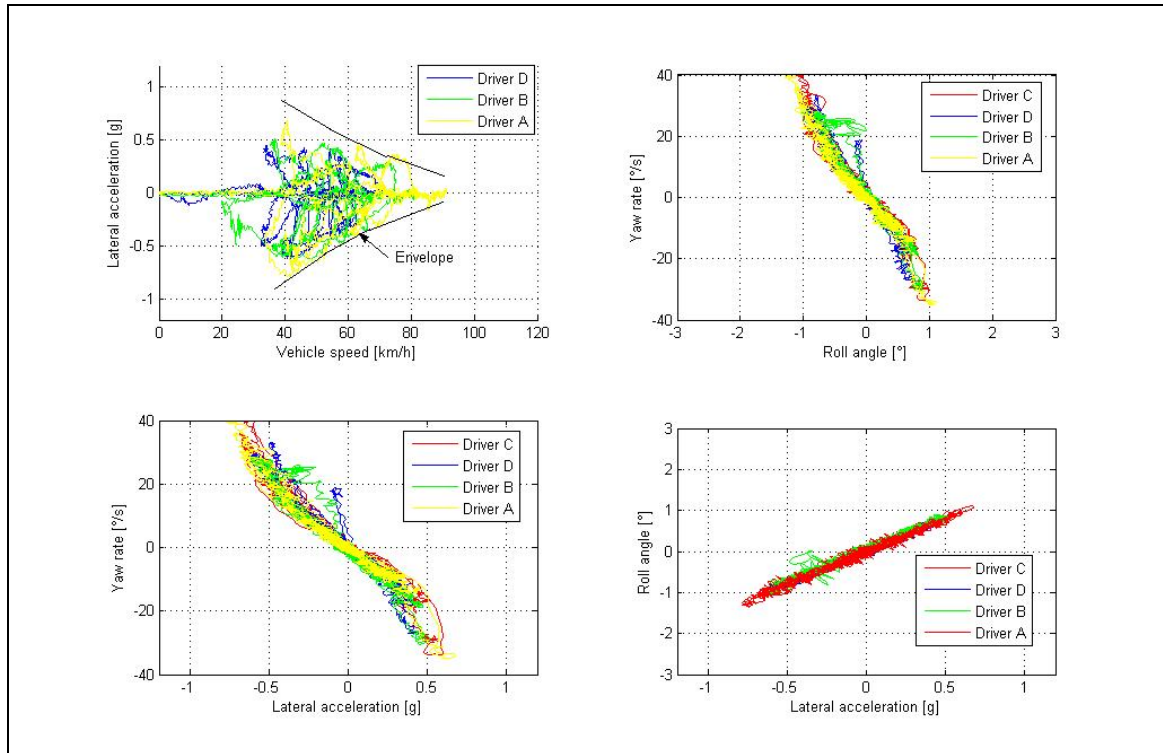


Figure A-5 - Lateral acceleration, yaw rate and roll angle performance of a Ford Courier on a dynamic handling track

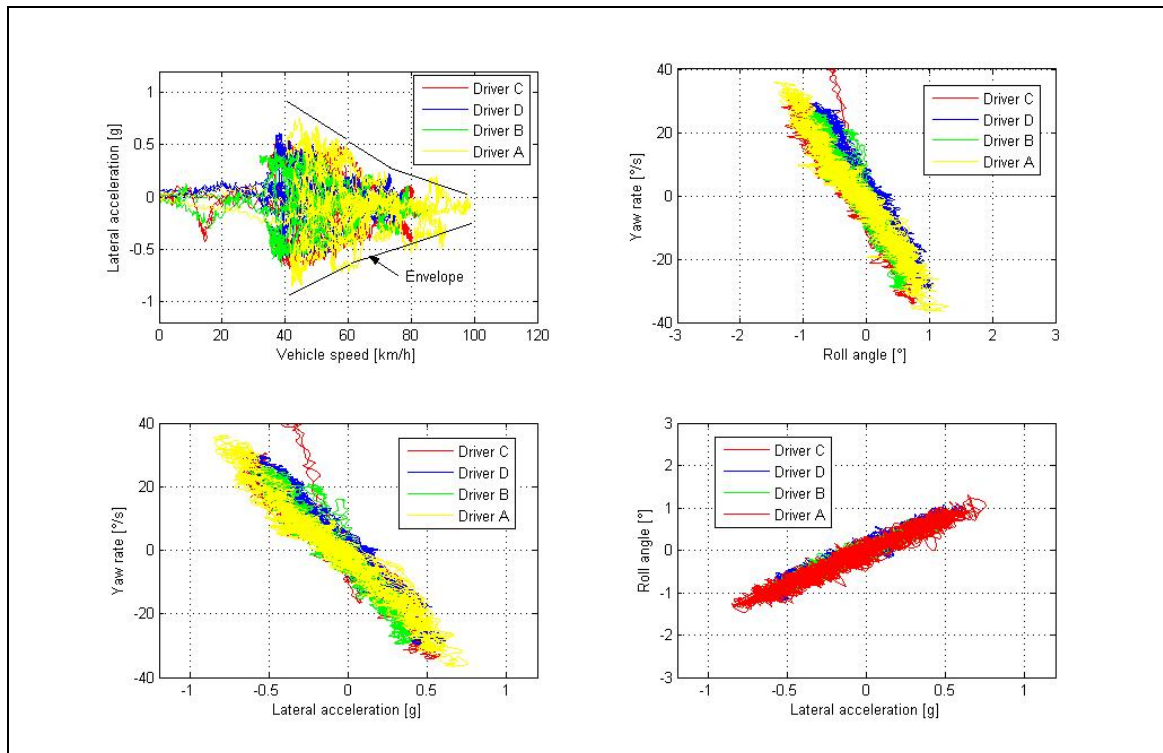


Figure A-6 - Lateral acceleration, yaw rate and roll angle performance of a Ford Courier on a ride and handling track

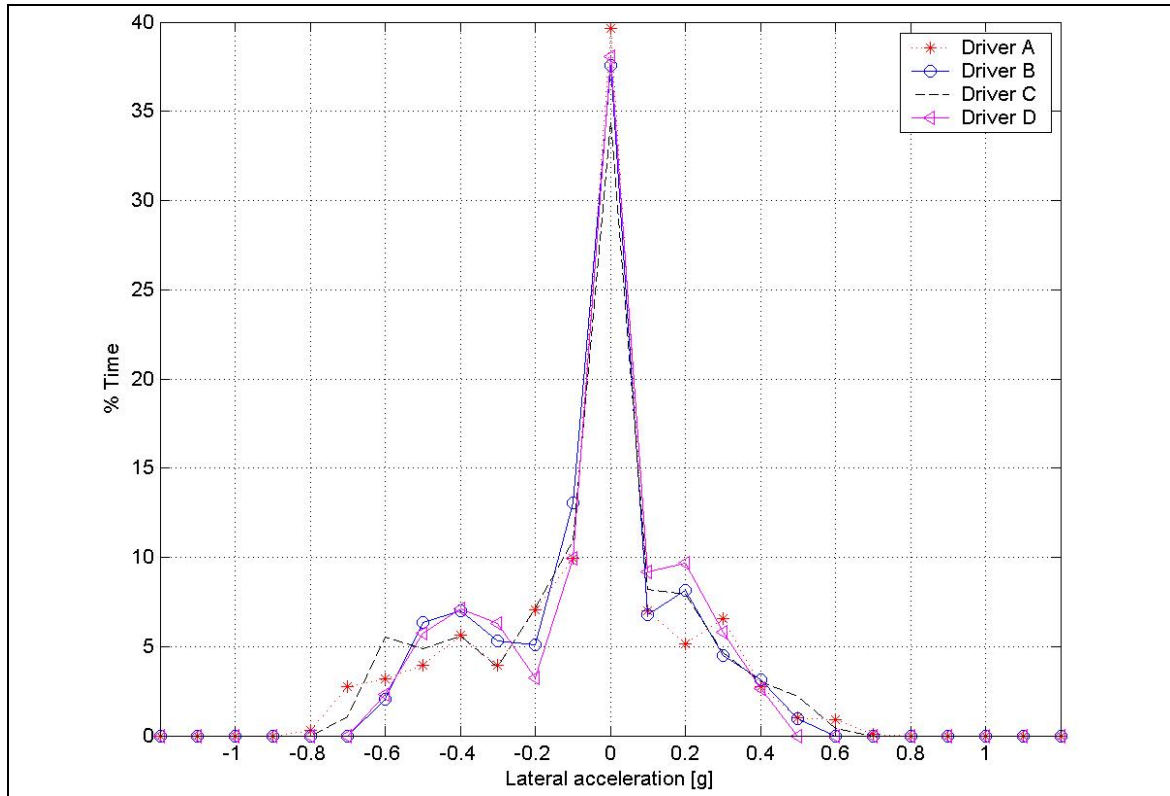


Figure A-7 – Lateral acceleration histogram for a Ford Courier on the dynamic handling track

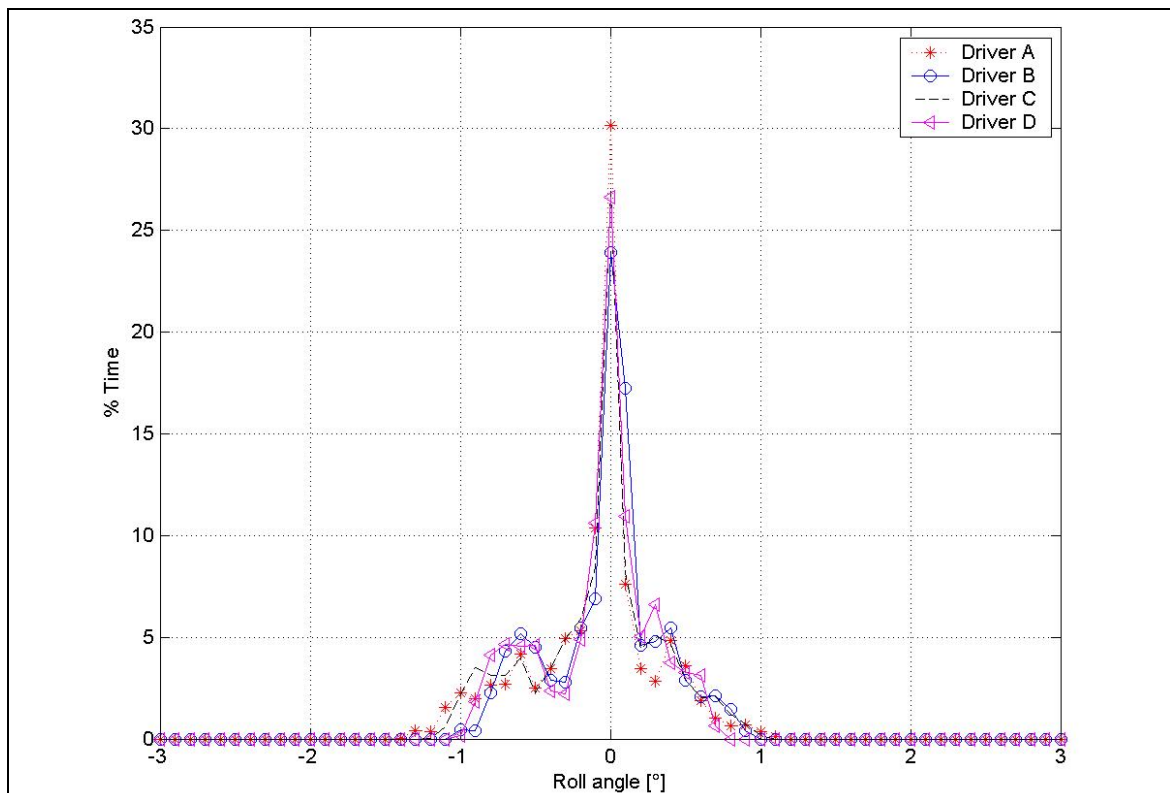


Figure A-8 - Roll angle histograms for a Ford Courier on a dynamic handling track

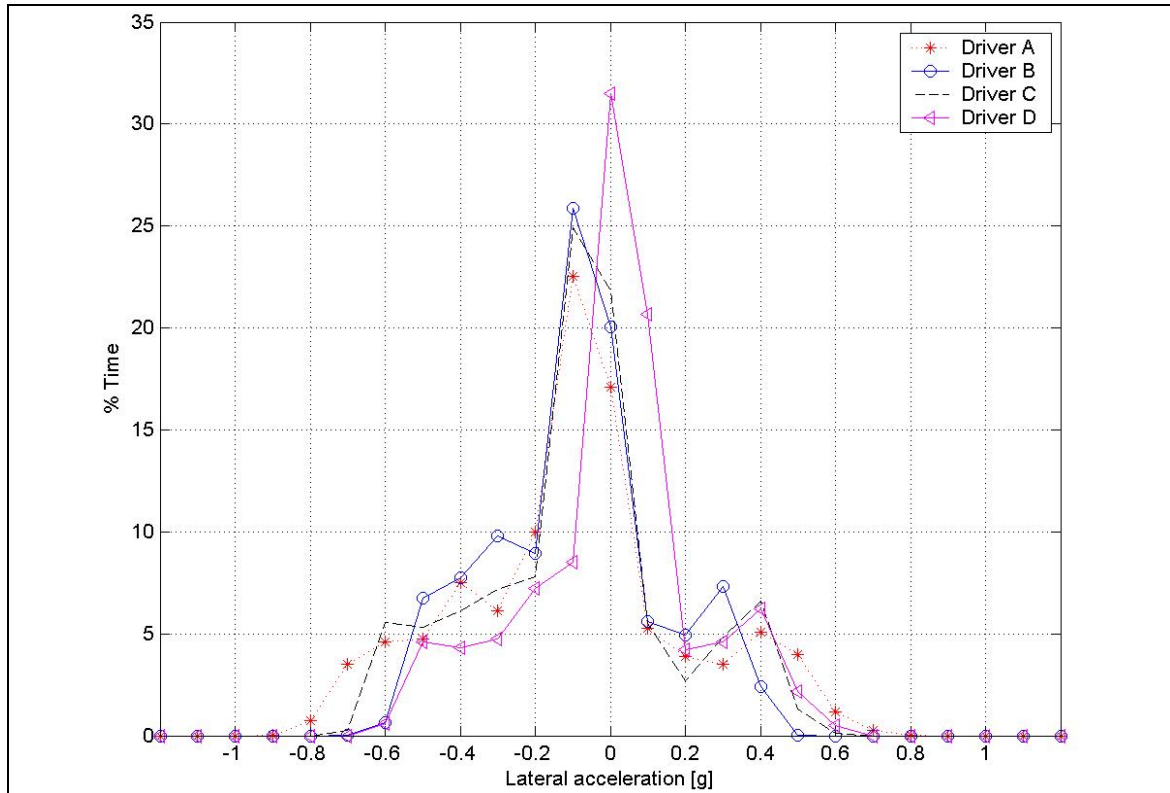


Figure A-9 - Lateral acceleration histogram of a Ford Courier on the ride and handling track

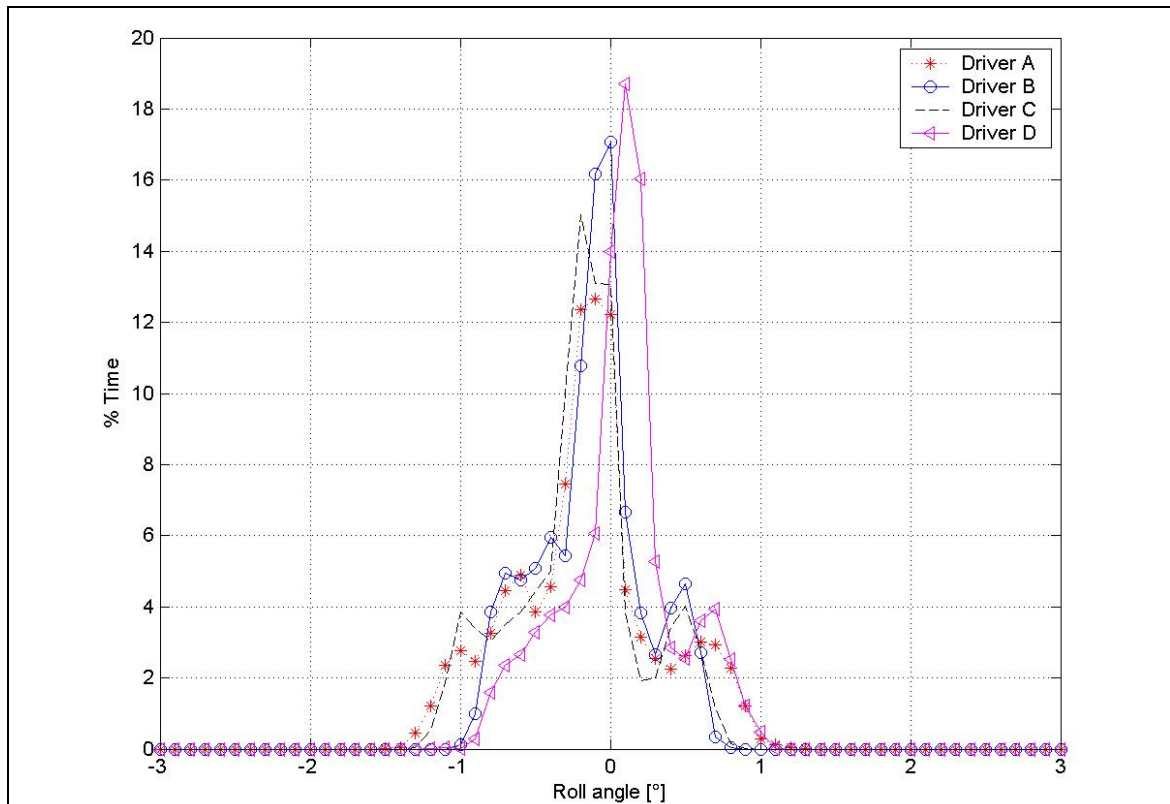


Figure A-10 - Roll angle histogram of a Ford Courier on a ride and handling track

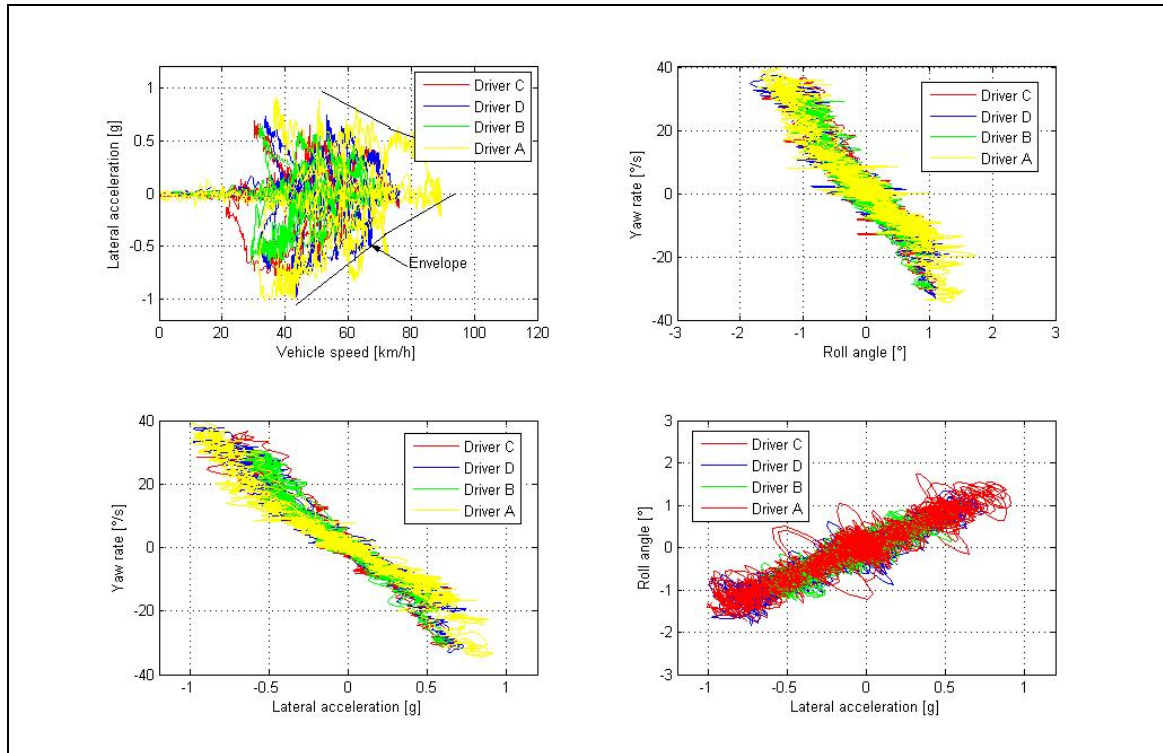


Figure A-11 - Lateral acceleration, yaw rate and roll angle performance of a VW Golf 4 GTI on a dynamic handling track

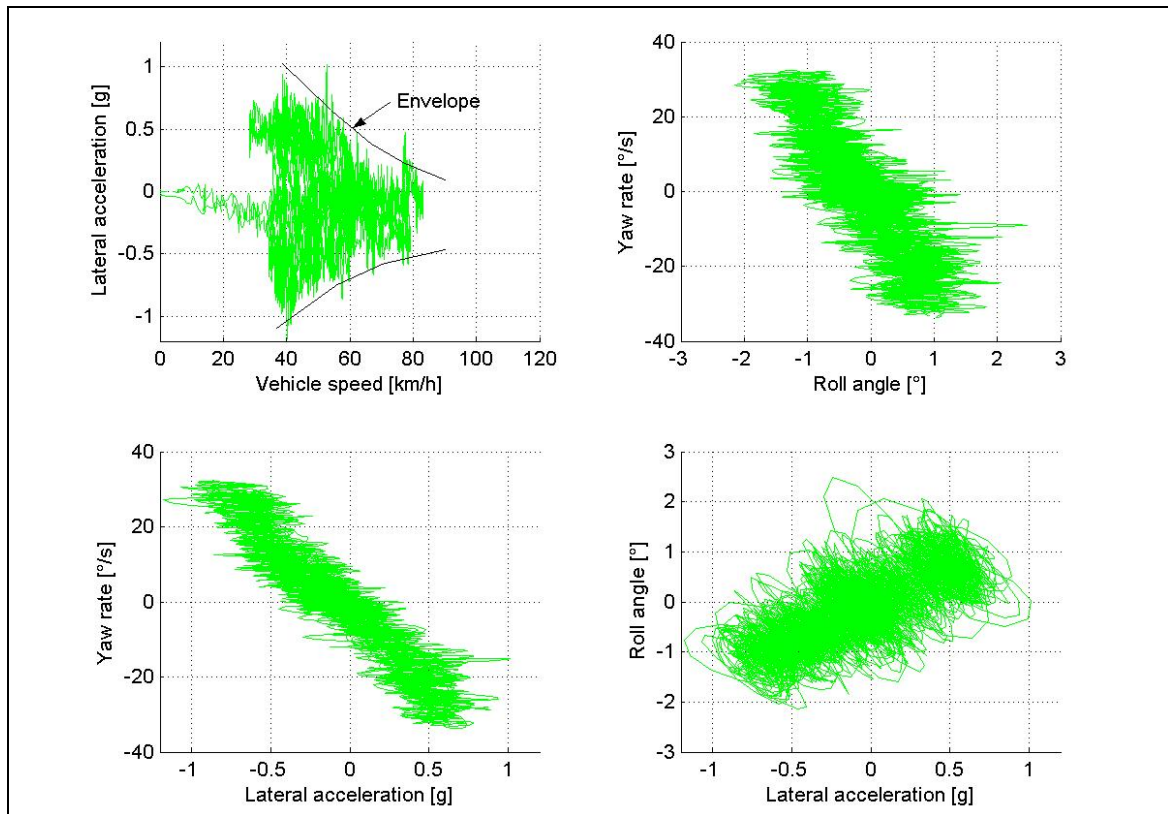


Figure A-12 - Lateral acceleration, yaw rate and roll angle performance of a VW Golf4 GTI on a ride and handling track

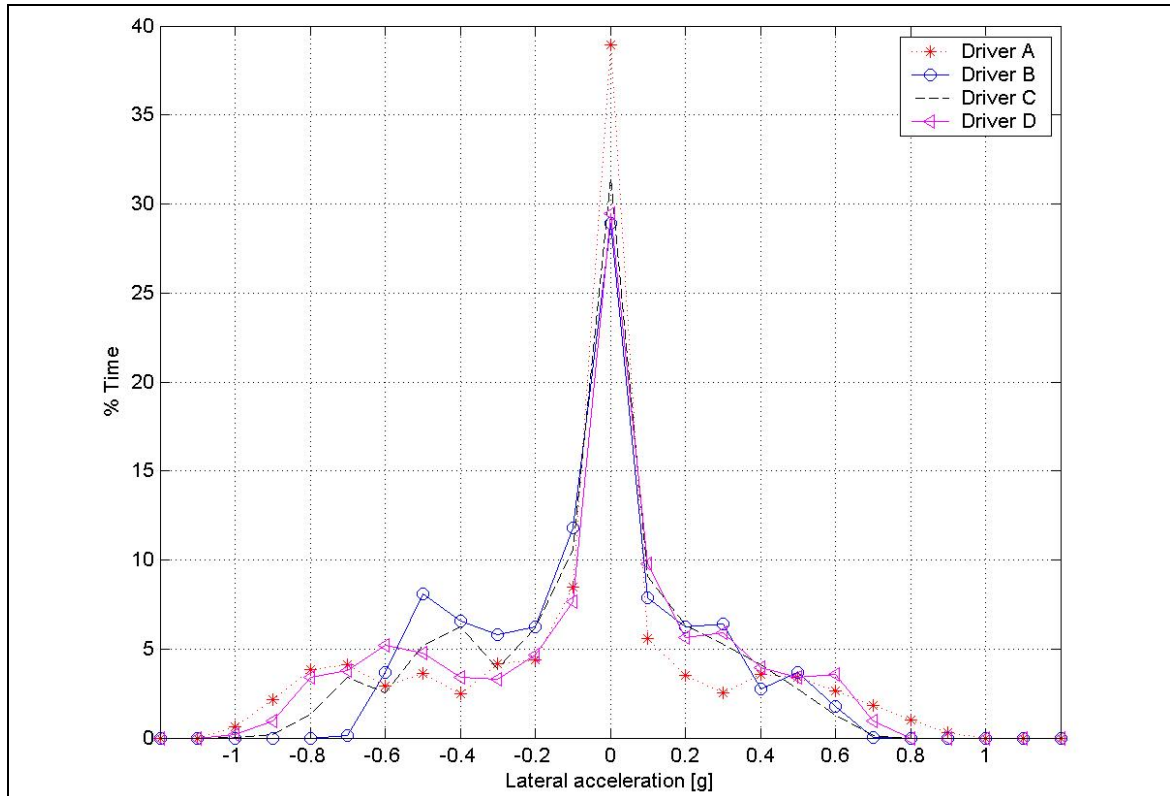


Figure A-13 - Lateral acceleration histogram for a VW Golf 4 GTI on a dynamic handling track

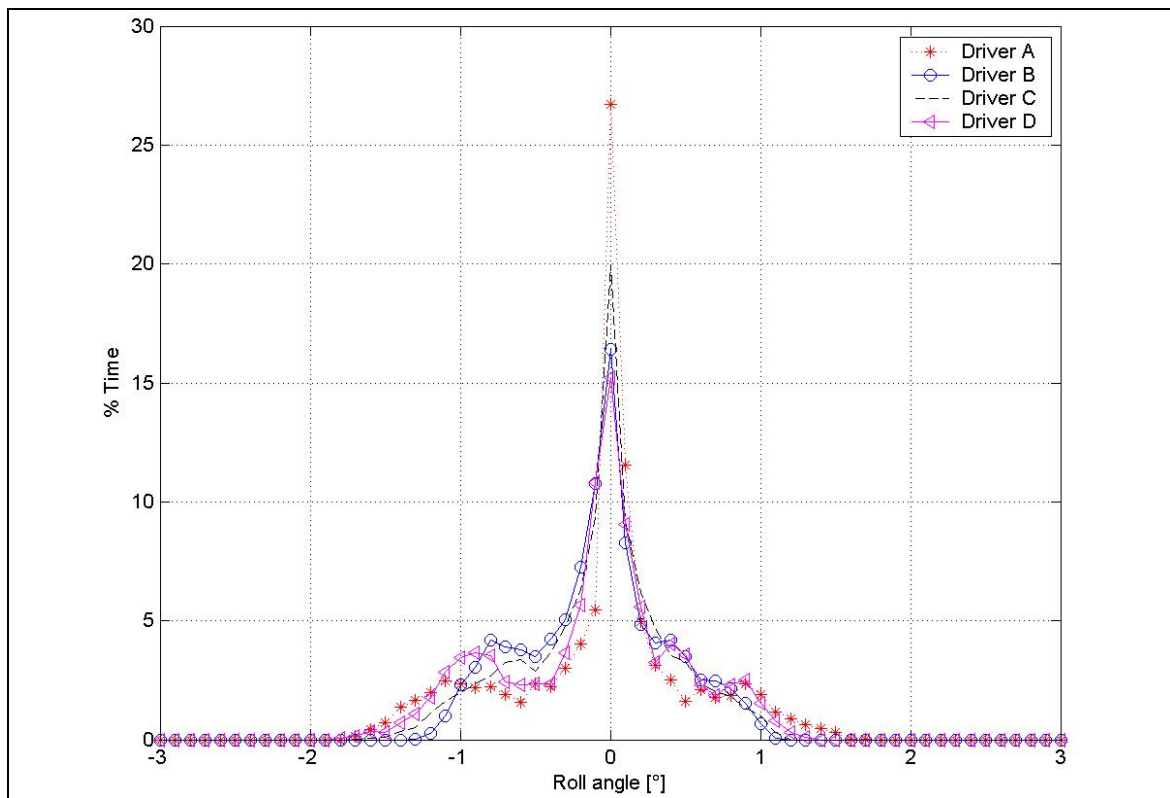


Figure A-14 - Roll angle histogram for a VW Golf 4 GTI on a dynamic handling track

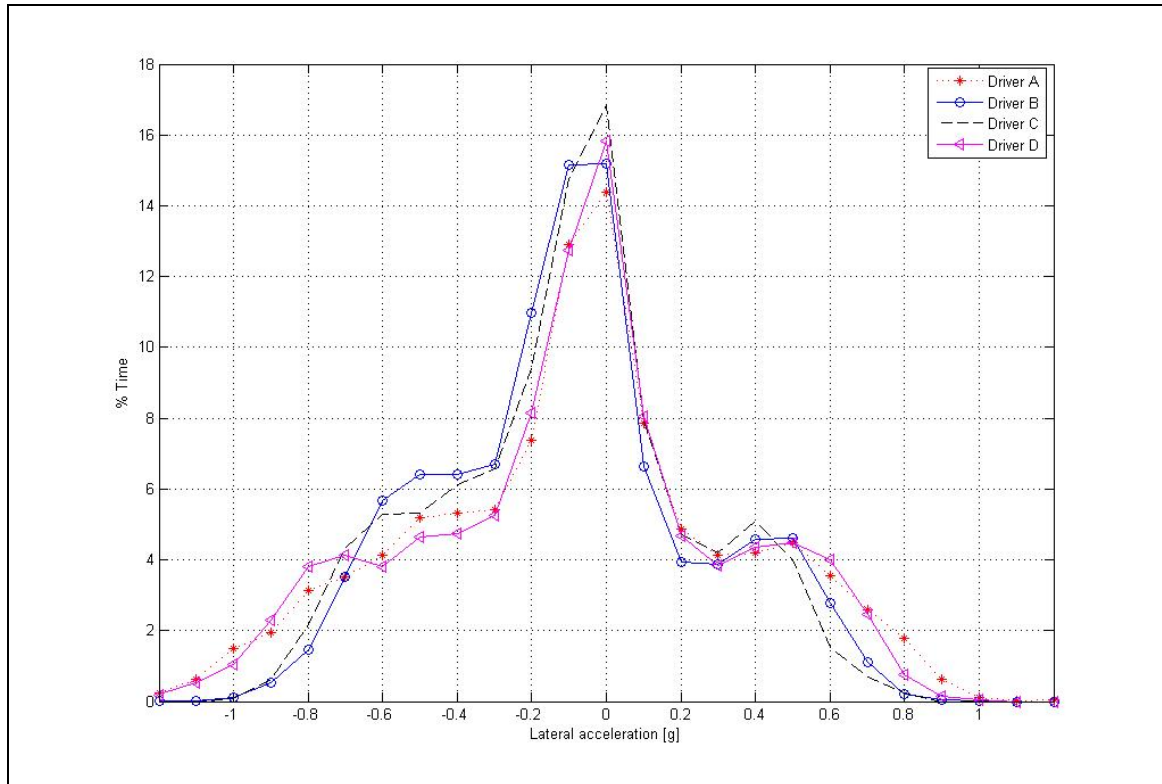


Figure A-15 - Lateral acceleration histogram for a VW Golf 4 GTI on a ride and handling track

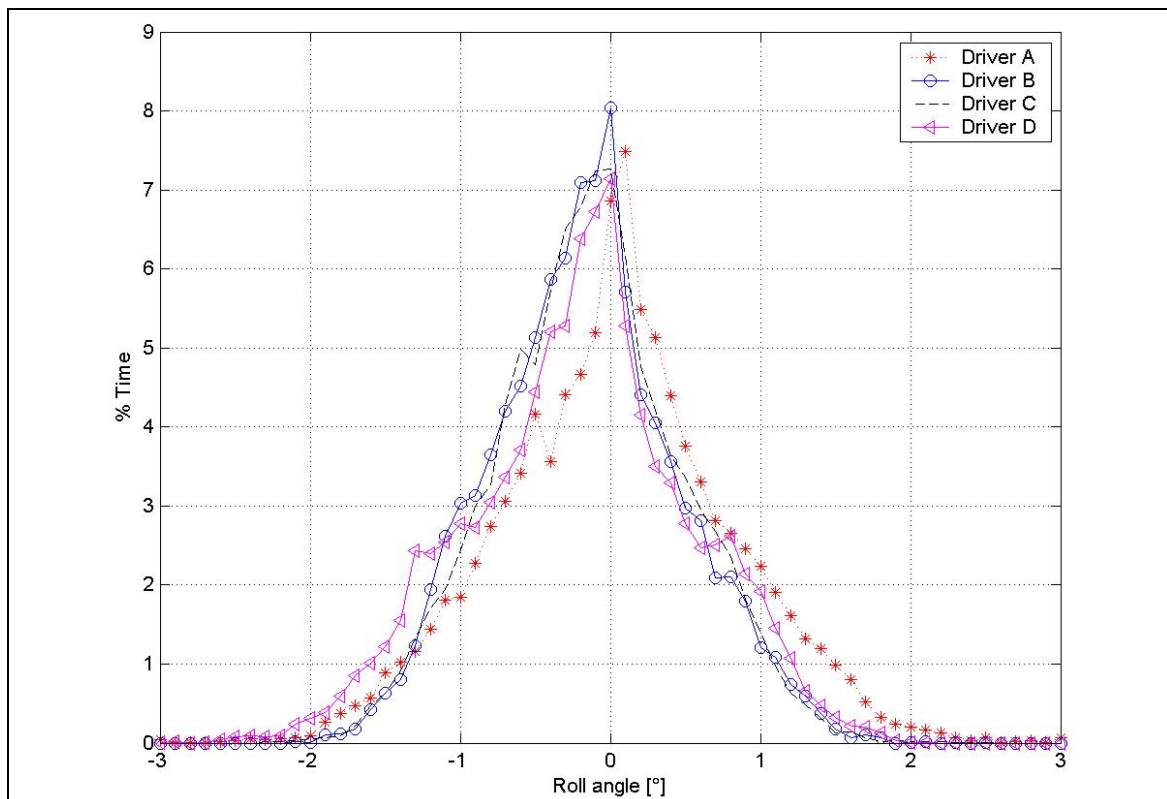


Figure A-16 - Roll angle histogram for a VW Golf 4 GTI on a ride and handling track

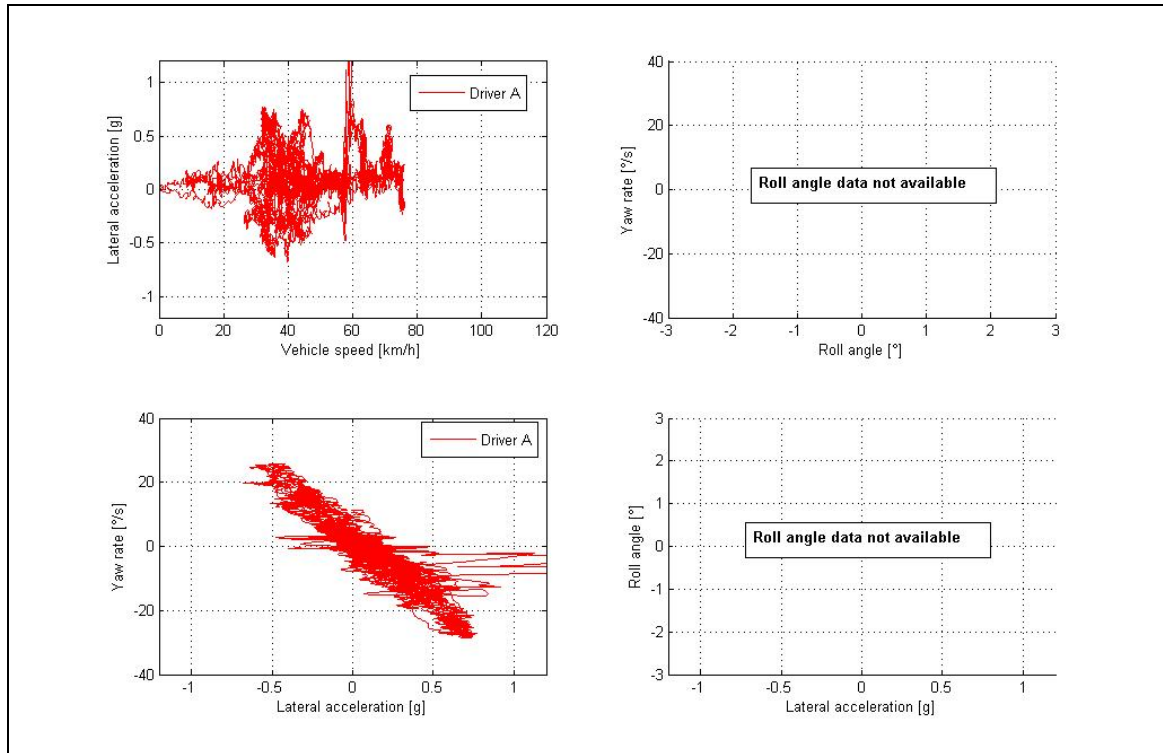


Figure A-17 - Lateral acceleration and yaw rate performance of a Land Rover Defender 110 on the ride and handling track (roll angle data not available)

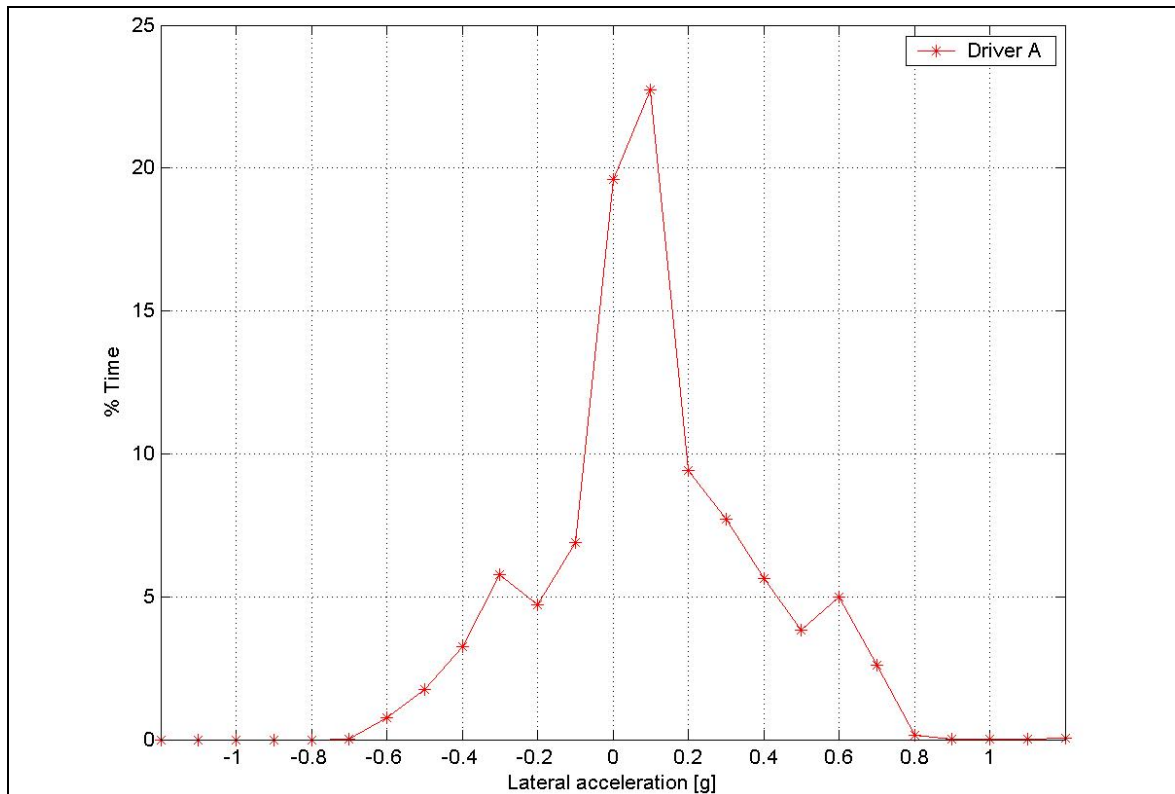


Figure A-18 – Lateral acceleration histogram for a Land Rover Defender 110 on the ride and handling track