CHARLES FUNK

PhD, PE, CFEI, CVFI

248.563.8423
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TRAFFIC ACCIDENT RECONSTRUCTION | FIRE ORIGIN & CAUSE INVESTIGATION | MECHANICAL FAILURE ANALYSIS

EDUCATION

UNIVERSITY OF MICHIGAN

PhD	Mechanical Engineering	**2005**
MS	Mechanical Engineering	**2001**

DREXEL UNIVERSITY

BS	Mechanical Engineering	**1999**

LICENSES & CERTIFICATIONS

Professional Engineer: IN, MI, NJ, NY, OH, PA, SC, WI

Certified Fire and Explosions Investigator

Certified Vehicle Fire Investigator

Certified Crash Data Retrieval (CDR) Technician and Analyst

Certified Aerial Work Platform Operator

AFFILIATIONS

SAE International

National Association of Professional Accident Reconstruction Specialists (NAPARS)

Michigan Association of Traffic Accident Investigators (MATAI)

National Associations of Fire Investigators (NAFI)

National Fire Protection Agency (NFPA)

American Society of Mechanical Engineers (ASME)

PROFESSIONAL PROFILE

Dr. Charles Funk is a Professional Engineer and consultant with expertise in accident reconstruction, mechanical engineering, and fire cause and origin investigation. He holds a B.S. in Mechanical Engineering from Drexel University and an M.S. and Ph.D. in Mechanical Engineering from the University of Michigan. Dr. Funk is a licensed engineer in multiple states.

Dr. Funk has investigated approximately 2,000 motor vehicle collisions, which have involved motorized wheelchairs, pedestrians, bicycles, motorcycles, passenger vehicles, off-road vehicles, and commercial vehicles. He is a trained Bosch Crash Data Retrieval (CDR) technician and has conducted numerous downloads from vehicles involved in frontal, side, rear, and rollover events. He also has experience performing downloads from commercial vehicle event data recorders. Dr. Funk also has experience and training in traffic signal timing interpretations. He has published research on motorcycle simulation comparison, acceleration and braking performances of school buses, accuracy of GoPro telemetry data, bumper mismatch collisions, stiffness coefficients, and pedestrian detection. He has also performed research on narrow object impacts and vehicle backing performance. Dr. Funk is a qualified Aerial Work Platform Operator.

Dr. Funk's thermal sciences experience includes conducting fire cause and origin investigations as well as analyses of combustion, fluid flow, and thermodynamics. He is a Certified Fire and Explosions Investigator and a Certified Vehicle Fire Investigator through the National Association of Fire Investigators. Dr. Funk has investigated numerous gas and electric appliances to determine whether or not they contributed to causing a fire. Additionally, Dr. Funk has extensive experience in determining the failure mechanism of various mechanical systems.

FUNK

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EXPERIENCE

Explico
2014 - Present *Principal Engineer*

Armstrong Forensic Engineers
2012 - 2014 *Senior Consultant*

Exponent Failure Analysis Associates, Inc.
2005 - 2012 *Managing Engineer*

University of Michigan
1999 - 2005 *Research Assistant*
1999 - 2005 *Graduate Student Instructor*

INSTRUCTOR

"Vehicle Crash Reconstruction: Principles and Technology," Society of Automotive Engineers, Current.

PEER REVIEWER

Society of Automotive Engineers

American Society for Mechanical Engineers

PEER-REVIEWED ARTICLES AND THESIS

Neal, J., Lipscomb, M., and Funk, C., "A Method for Calculating Frontal A and B Stiffness Coefficients from NCAP Barrier Crash Tests Accounting for Bumper Cover Air Gap," SAE Technical Paper 2024-01-2473, 2024, https://doi.org/10.4271/2024-01-2473.

Neal, J., Funk, C., and Sproule, D., "The Accuracy of Vehicle Modeling When Using an Inversely Calibrated Camera in PhotoModeler," SAE Technical Paper 2021-01-0883, 2021.

Funk, C., Petroskey, K.. Arndt, S., and Vozza, A., "Vehicle-Specific Headlamp Mapping for Nighttime Visibility," SAE Technical Paper 2021-01-0880, 2021.

Funk, C., Vozza, A., and Petroskey, K., "An Optimized Method for Mapping Headlamp Illumination Patterns," SAE Technical Paper 2021-01-0886, 2021.

Petroskey, K., Funk, C., Tibavinsky, I., "Validation of Telemetry Data Acquisition using GoPro Cameras," SAE Technical Paper Series, 2020-01-0875.

"Analysis of SIMON/DYMESH Simulations for Underride Collisions," Engineering Dynamics Corporation WP-2016-2, 2016.

Funk, C., "Comparison of Computer Simulations and Reconstruction Methodologies for Motorcycle Accidents," *22nd Annual Congress of the European Associate of Accident Research and Analysis, Paper 2013-07*, October 2013.

Jackson, G., Funk, C., and Jacuzzi, E., "GPS in Accident Reconstruction," *Michigan Defense Trial Counsel Newsletter*, September 2012.

Funk, C., "Simulations in Vehicle Accident Reconstruction," *Michigan Defense Trial Counsel Newsletter,* February 2012.

Funk C., Howery T., Jager J., Lee D., "Acceleration and Braking Performance of School Buses," *SAE Technical Paper Series,* 2012-01-0593.

Funk C., Sick V., Reuss D.L., Dahm W.J.A., "Turbulence Properties of High and Low Swirl Incylinder Flows," *SAE Technical Paper Series*, 2002-01-2841, 2002.

Funk C., "Detailed Analysis of Experimental In-cylinder Flow Fields with Applications to a K-epsilon Model," University of Michigan, Master's

DOCTORAL DISSERTATION

Funk C., "An In-depth Comparison of Experimental and Computational Turbulence Parameters for In-cyclinder Engine Flows," *University of Michigan*, April 2005.

PRESENTATIONS AND PUBLISHED ABSTRACTS

"Fundamentals of Accident Reconstruction," *Lawrence Technological University*, Guest Lecturer, October 2013.

"Comparison of Computer Simulations and Reconstruction Methodologies for Motorcycle Accidents," *22nd Annual Congress of the European Association of Accident Research and Analysis*, Paper 2013-07, October 2013.

"Vehicle Engineering and Accident Reconstruction," University of Michigan Department of Engineering, March 2011.

"Accident Reconstruction," *Society of Automotive Engineers*, Detroit, June 2010.

"Vehicle Engineering," *University of Michigan*, Department of Engineering, February 2010.

"Vehicle Engineering," *Society of Automotive Engineers*, October 2008.

"Vehicle Engineering," *University of Michigan*, October 2008.

"Implications of Swirl on Turbulence Properties in an IC Engine," *Physical Chemistry Group*, University of Heidelberg, Germany, November 2002.

"Turbulence Properties of High and Low-Swirl Flows," *SAE Fuels and Lubricants Conference*, San Diego, CA, October 2002.

"Implications of Swirl on Kinetic Energy in SI Engines," *3rd Annual Graduate Student Symposium*, University of Michigan, Ann Arbor, MI, September 2002.

"Comparison of Experimental In-cyclinder Flow Fields to a K-epsilon Model," *Combustion and Fuels Group of Drexel University*, Philadelphia, PA, November 2001.

"Detailed Analysis of Experimental In-cyclinder Flow Fields with Applications to a K-epsilon Model," *General Motors Research and Development Center*, Warren, MI, October 2001.

PROFESSIONAL DEVELOPMENT

Northwestern University Center for Public Safety

Accident Reconstruction

Advanced Crash Reconstruction

Utilizing Human Factors

Society of Automotive Engineers (SAE)
Accident Reconstruction, the Autonomous Vehicle and ADAS

Vehicle Accident Reconstruction Methods

Vehicle Crash Reconstruction: Principles and Technology

Fundamentals of Heavy Truck Dynamics

Applying Automotive EDR Data to Traffic Crash Reconstruction

Commercial Braking System

Accessing and Interpreting Heavy Vehicle Event Data Recorders

Vehicle Dynamics for Passenger Cars and Light Trucks

Michigan State University

Commercial Vehicle Accident Reconstruction

Motorcycle Accident Investigation and Reconstruction

School Bus Accident Reconstruction

Lamp Examination

Collision Safety Institute

Bosch Crash Data Retrieval (CDR) Certified Technician and Analyst Course

2015 EDR Summit

HVE

Forum, 2006

Forum, 2012

European Association of Accident Research and Analysis

22nd Annual Congress, 2013

Photogrammetry

Advanced Photogrammetry for Collision Reconstruction

New York Statewide Traffic Accident Reconstruction Society (NYSTARS)

Pedestrian Collisions

Fire Investigation

National Fire, Arson & Explosion Investigation Training

Fire Analysis Litigation Seminar

Investigation of Gas and Electric Appliance Fires

Vehicle Fire, Arson & Explosion Investigation

2017 National Fire, Arson & Explosion Investigation Training

National Highway Institute

Traffic Signal Design and Operation NHI-133121

National Association of Professional Accident Reconstruction Specialist (NAPARS)

ATV Crash Analysis, April 2024

Tire Forensics, March 2021

Traffic Controls

Roadway Traffic Control, July 2024

Roadway Traffic Signs, July 2024

Signal Timing Optimization, June 2024

Work Zone Traffic Control, June 2024

Traffic Signal Support, Indication and Signing, June 2024

Designing Traffic Signals, June 2024

Detection for Traffic Signals, June 2024

Traffic Signal Controllers, June 2024