

Special Section: 2022 IMECE Papers

This issue includes a special section that features select papers from the 2022 ASME International Mechanical Engineering Congress and Exhibition (IMECE). In an effort to attract more papers from conferences for the ASME Letters in Dynamic Systems and Control (ALDSC), we reached out to IMECE organizers and requested recommendations for papers to consider for this journal. The idea was to offer those authors the opportunity to publish in a refereed journal while being able to still present their papers at the conference.

With help from IMECE Track Chairs Kostas Karazis and Dumitru Caruntu, we identified candidate IMECE papers and contacted those authors to ask them whether they would be willing to have their papers considered for publication in ALDSC. Those papers that were formally submitted were then reviewed using the standard review process. Out of a total of ten papers submitted, we accepted four papers, which are included in this issue.

The featured papers cover the gamut from sensor selection for aerospace structural vibration testing to control of a ball-catching robot. One paper, by a team from Sandia National Laboratories, compares sensor selection techniques that leverage finite element modeling to intelligently place accelerometers to capture the structural dynamics of an aerospace structure. Another paper, by a team from the University of Louisiana at Lafayette, develops an efficient

full dynamic model of a non-holonomic omni-wheel robot that allows for a PID control-law to accurately follow arbitrary paths. A third paper, written by researchers at Arizona State University, proposes a new compound fractional sliding mode control and super-twisting control to control a MEMS gyroscope. A new sliding mode surface was defined to design the proposed new sliding mode controller, with the advantage of better tracking performance and robustness against external perturbation. Finally, a paper from researchers at Weber State University develops a robotic ball-catching platform system that uses two onboard cameras to rapidly orient the platform towards the throwing direction.

I hope you enjoy this selection of articles from IMECE, and I encourage you to consider submitting one of your own papers to ALDSC in the near future.

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