

Abstract Submitted  
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**A New Approach to Time-Resolved 3D-PTV** AARON BOOMSMA, DAN TROOLIN, DAN BJORKQUIST, TSI Inc, TSI INC TEAM — Volumetric three-component velocimetry via particle tracking is a powerful alternative to TomoPIV. It has been thoroughly documented that compared to TomoPIV, particle tracking velocimetry (PTV) methods (whether 2D or 3D) better resolve regions of high velocity gradient, identify fewer ghost particles, and are less computationally demanding, which results in shorter processing times. Recently, 3D-PTV has seen renewed interest in the PIV community with the availability of time-resolved data. Of course, advances in hardware are partly to thank for that availability—higher speed cameras, more effective memory management, and higher speed lasers. But in software, algorithms that utilize time resolved data to improve 3D particle reconstruction and particle tracking are also under development and advancing (e.g. shake-the-box, neighbor tracking reconstruction, etc.). In the current study, we present a new 3D-PTV method that incorporates time-resolved data. We detail the method, its performance in terms of particle identification and reconstruction error and their relation to varying seeding densities, as well as computational performance.

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