Expert Insights: Hidden Gems from Application Specialists at Siemens Healthineers

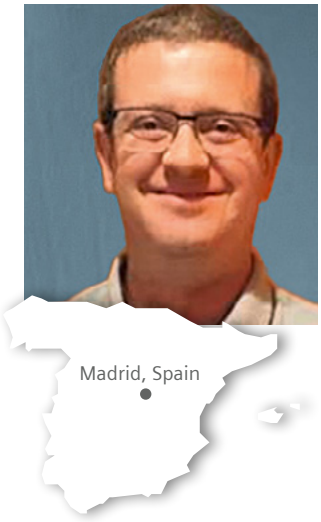
Alberto Cruces on the Echo Spacing parameter

Alberto Cruces

Alberto is a member of the application specialists team in Madrid, Spain. After training as a lab technician and radiographer, he started his journey in MRI almost by chance, more than 20 years ago. He remembers the day he was assigned to operate an MRI system for the first time and how he had to learn about this new world and its many possibilities. Perhaps this is why he is now so passionate about teaching. Before joining Siemens Healthineers in 2012, he worked as a radiographer and educator in the fields of MRI, CT, PET-CT, and mammography.

Alberto is committed to helping new users learn the nuts and bolts of MRI, and there is no better reward for him than seeing customers get the most out of equipment from Siemens Healthineers to arrive at an accurate patient diagnosis. In addition to his role as an applications scientist, in which he provides support both in Spain and beyond, he enjoys speaking at national conferences and demonstrating the latest advances in MRI. He has also participated in numerous system tests for MR headquarters, a collaboration that he finds very motivating and useful for keeping up to date with the latest developments.

Apart from work, Alberto's passions in life are his family and cooking. He likes to spend as much time as possible with his family, and he loves trying out new dishes – always with a nice cold beer on the side.



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My favorite feature ...

... is the Echo Spacing (ES) parameter. Learning how to control and modify the ES is key to avoiding artifacts on TrueFISP sequences, such as in cardiac cine imaging, especially at 3 Tesla.

At 3T, it is very important to manually accurately position the shimming volume to the patient's heart during a cardiac MR examination. However, flow or banding artifacts can still appear in sensitive sequences like TrueFISP, depending on the patient's morphology, physiology, and pathology, and the TrueFISP sequences are particularly sensitive to this type of artifact. When this happens, I always turn to the ES parameter in the Sequence tab. Adjusting the ES value to below 3 ms (e.g., 2.8–2.9 ms) helps remove the undesired artifacts in most cases. To do this, you can adjust the RF Pulse Type, most times using the Fast option and allowing Asymmetric Echo, while increasing the Readout BW. Also choosing a higher gradient mode (e.g., from Fast to Performance) can decrease the ES as shown in Figure 2. Don't forget to keep an eye on the signal-to-noise ratio and the desired flip angle when applying these changes to the sequences, to make sure that image quality and contrast are preserved.

Acknowledgments

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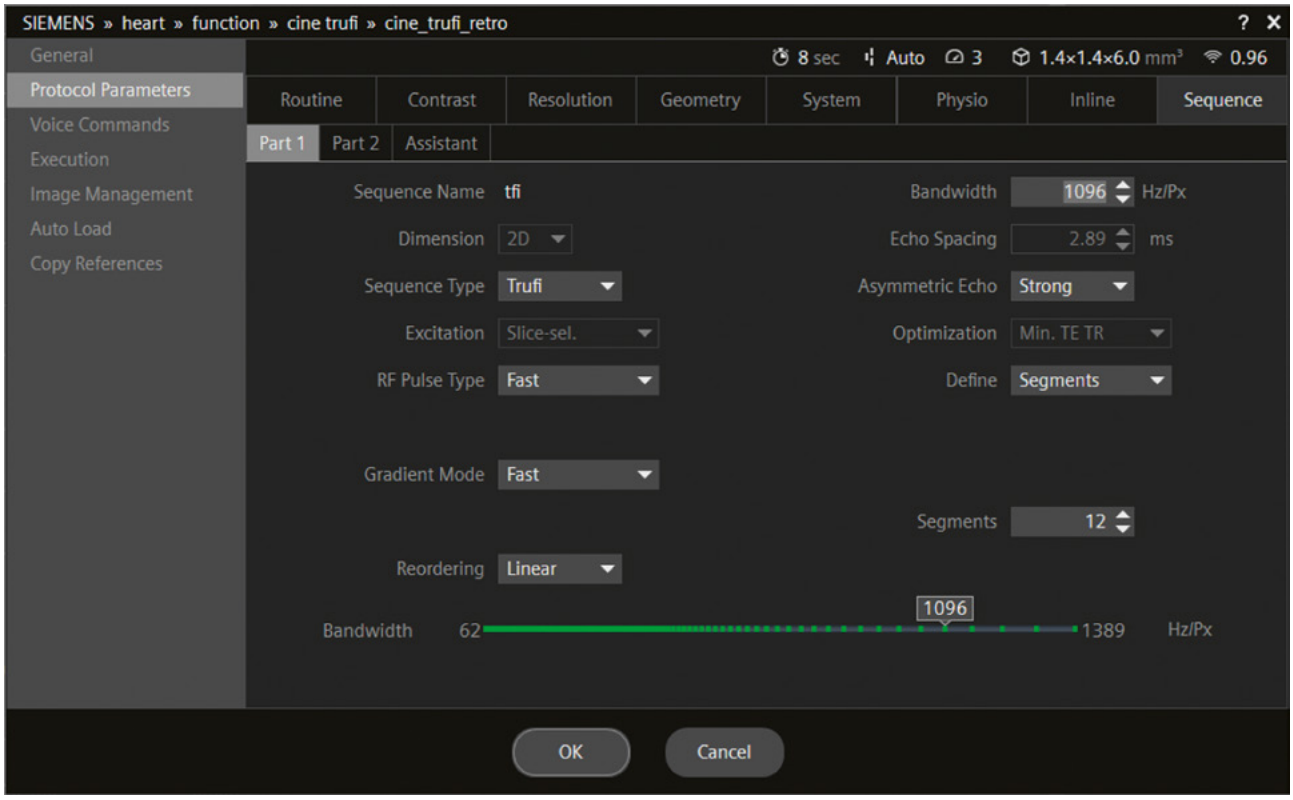
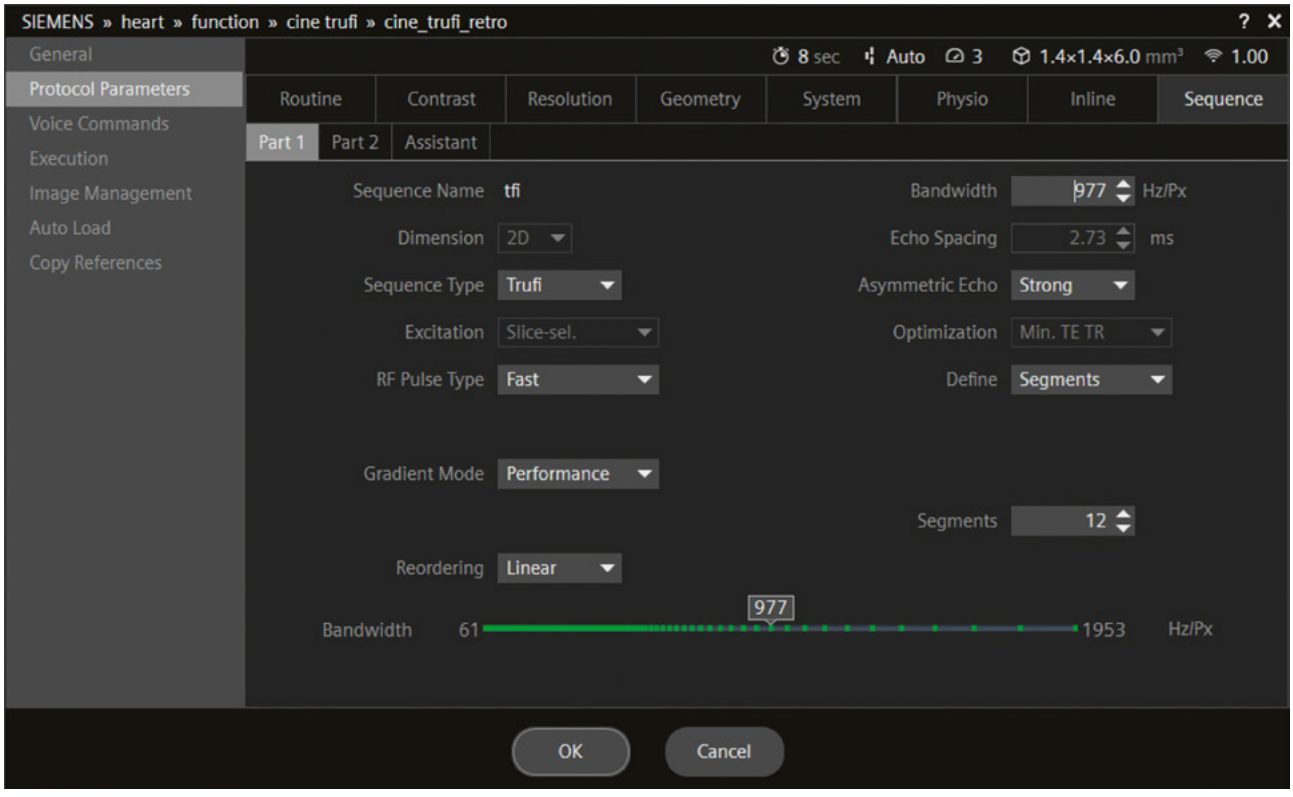


1 Standard gradients.



2 High-performance gradients.