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Atmospheric Measurement Techniques Discussions

Interactive comment on "Coded continuous wave meteor radar" *by* J. Vierinen et al.

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We thank the referee for raising valuable points that will ultimately improve the quality of our paper. Specific non grammar related points are addressed in the text below. The referee points are prefixed with ">".

> Page 7880, line 26: Herlofson 1947 would be the original reference for the theory of specular meteor radar echoes

We will add the missing reference. We were unfortunately not aware of this.

> Page 7884, line 7-9: There are a number of factors that go into the cost of a radar, so it seems odd to state the financial savings with such specificity. I believe the paper would be better off without this sentence or a broader statement about cost reduction.

This is a good comment. We will merely wanted to emphasize that the same sys-

tem can observe more meteors by sharing receiver antennas and the radio band with multiple transmitters. We are not affiliated with a company that sells meteor radars.

> Page 7893, line 20: A minor complaint: Throughout the description of the CW radar, it was discussed in terms of continuous power, but now the authors use peak power. They may wish to change this for the sake of consistency.

We will clarify this. Even a coded continuous wave radar has a peak power (the power that it always transmits). We just wanted to make a point that instantaneous power is reduced, when compared with a pulsed system with the same average power.

> It is my understanding that SuperDARN radars, at least the digital upgrades, already use a pseudo-random pulse interval scheme to deal with the large distances involved. Is this substantially different from the coded CW design?

SuperDARN uses pulses that with staggered IPP lengths. Some of them might use pseudorandom phases on the transmit pulses, which is a large advance. No SuperDARN system uses a continuous phasecoded waveform, which would allow improved lag-resolution, solve the range Doppler dilemma in a more satisfactory way, and allow smaller peak power to be used. We are in the process of working with the University of Saskatchewan group to develop these ideas further on SuperDARN type radars. Furthermore, the ability to utilize the same radar band with multiple illuminators all using different codes can further improve radar coverage and improve the fidelity of the SuperDARN type of measurements.

We feel that our claim that field aligned irregularity HF radars would benefit from similar signal processing is valid.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 7879, 2015.