WHAT IS CLAIMED IS:

1. A method for determining interference noise recorded in a first seismic survey of a subsurface generated by a source in a second seismic survey, the method comprising:

receiving seismic data recorded by seismic sensors of the first seismic survey, wherein the seismic data includes seismic waves that originate from the first seismic survey and seismic waves that originate from the second seismic survey;

receiving actual relative shooting timing of seismic sources of the first and second seismic surveys; said actual relative shooting timing being not calculated from said seismic data but known from the operators of the seismic surveys;

applying a processing algorithm to the seismic data to calculate the interference noise, wherein the processing algorithm that takes into consideration the actual relative shooting timing of the seismic sources; and

generating a final image of the subsurface based on the recorded seismic data from which the interference noise is subtracted.

~~2. The method of Claim 1, wherein the recorded seismic data from which the interference noise is subtracted is free of energy from the second seismic survey.~~

32. The method of Claim 1 or 2, wherein the step of applying comprises:

sorting or receiving the recorded seismic data in the shot domain; and

filtering out the interference noise.

43. The method of Claim 32, wherein the step of filtering out comprises:

muting in the frequency-wavenumber domain, or

muting in the tau-p domain, or

muting in the radon domain.

~~5~~4. The method of Claim 1 or 2, wherein the step of applying comprises:

sorting the recorded seismic data in a domain in which the interference noise appears impulsive; and

applying impulsive denoise.

~~6~~5. The method of Claim 1 or 2, wherein the step of applying comprises:

transforming the recorded seismic data to a model space that may at least partially separate signal and interference noise in which the interference noise appears impulsive; and

applying impulsive denoise.

~~7. The method of Claim 1 or 2, wherein the step of applying comprises:~~

~~sorting the recorded seismic data to a domain where the interference noise appear impulsive;~~

~~aligning the interference noise;~~

~~removing a main signal with impulsive denoise attenuation;~~

~~aligning the main signal;~~

~~removing the interfence noise with impulsive denoise attenuation; and~~

~~subtracting the interference noise from the recorded seismic data.~~

~~8~~6. The method of Claim 1 or 2, wherein the step of applying comprises:

sorting the recorded seismic data into a domain in which the interference noise is impulsive;

simultaneously calculating a main signal model and a noise model based on the recorded seismic data, an operator for the main signal, an operator for the interference noise, and an operator that takes into account the shooting timing; and

calculating the recorded seismic data from which the interference noise is subtracted.

~~9~~7. The method of any one of the preceding claims, further comprising:

receiving actual positions of the seismic sources of the first and second seismic surveys.

~~10~~8. The method of any one of the preceding claims, wherein the recorded seismic data is continuously recorded with no lag time.

~~11~~9. The method of any one of the preceding claims, wherein the actual relative shooting timing of the seismic sources is the difference in actual shooting timing of the seismic sources.

~~12. A method for determining interference noise recorded in a first seismic survey of a subsurface generated by a source in a second seismic survey, the method comprising:~~

~~receiving seismic data recorded by seismic sensors of the first seismic survey, wherein the seismic data includes seismic waves that originate from the first seismic survey and seismic waves that originate from the second seismic survey;~~

~~receiving actual shooting timing and coordinates of seismic sources of the first and second seismic surveys;~~

~~applying a processing algorithm to the seismic data to calculate the interference noise, wherein the processing algorithm that takes into consideration the actual shooting timing and the coordinates of the seismic sources; and~~

~~generating a final image of the subsurface based on the recorded seismic data from which the interference noise is subtracted.~~

~~13~~10. A computing device for determining interference noise recorded in a first seismic survey of a subsurface generated by a source in a second seismic survey, the computing device comprising:

an interface that receives seismic data recorded by seismic sensors of the first seismic survey, wherein the seismic data includes seismic waves that originate from the first seismic survey and seismic waves that originate from the second seismic survey;

the interface further receives actual relative shooting timing of seismic sources of the first and second seismic surveys; said actual relative shooting timing being not calculated from said seismic data but known from the operators of the seismic surveys; and

a processor connected to the interface and configured to

apply a processing algorithm to the seismic data to calculate the interference noise, wherein the processing algorithm that takes into consideration the actual relative shooting timing of the seismic sources, and

generate a final image of the subsurface based on the recorded seismic data from which the interference noise is subtracted.

~~14. The device of Claim 13, wherein the recorded seismic data from which the interference noise is subtracted is free of energy from the second seismic survey.~~

~~15~~11. The device of Claim ~~13 or 14~~10, wherein the processor is further configured to:

sort or receiving the recorded seismic data in the shot domain; and

filter out the interference noise.

~~16~~12. The device of Claim ~~15~~10, wherein the processor is further configured to:

mute a noise model in the frequency-wavenumber domain, or

mute a noise model in the tau-p domain, or

mute a noise model in the radon domain.

~~17~~13. The device of Claim ~~13 or 14~~10, wherein the processor is further configured to:

sort the recorded seismic data in a domain in which the interference noise appears impulsive; and

apply impulsive denoise.

~~18~~14. The device of Claim ~~13 or 14~~10, wherein the processor is further configured to:

transform the recorded seismic data to a model space that may at least partially separate signal and interference noise in which the interference noise appears impulsive; and

apply impulsive denoise.

~~19. The device of Claim 13 or 14, wherein the processor is further configured to:~~

~~sort the recorded seismic data to a domain where the interference noise appear impulsive;~~

~~align the interference noise;~~

~~remove a main signal with impulsive denoise attenuation;~~

~~align the main signal;~~

~~remove the interfence noise with impulsive denoise attenuation; and~~

~~subtract the interference noise from the recorded seismic data.~~

~~20~~15. The device of Claim ~~13 or 14~~10, wherein the processor is further configured to:

sort the recorded seismic data into a domain in which the interference noise is impulsive;

simultaneously calculate a main signal model and a noise model based on the recorded seismic data, an operator for the main signal, an operator for the interference noise, and an operator that takes into account the shooting timing; and

calculate the recorded seismic data from which the interference noise is subtracted.