The invention claimed is:

1. A system comprising:

a fiber laser comprising:

a master oscillator configured to generate a seed pulses; and

a string of amplifiers configured to receive said seed pulses and produce a pump signal; and

an optical parametric oscillator (OPO) coupled to the fiber laser,

wherein the OPO is configured to receive the pump signal and produce an output pulse train,

wherein the OPO is further configured to only convert pump signals with intensities above a predefined OPO threshold,

wherein an internal component of the fiber laser is used for modulating the pump signal, and

wherein the pump signal is used to modulate the OPO output pulse train.

2. The system of claim 1, wherein said pump fiber laser is at least one of: an "all-fiber" fiber laser or a hybrid fiber laser.

3. The system of claim 1, wherein said at least one internal, directly modulatable component is at least one of: a power amplifier pump diode, an amplifier pump diode, or an oscillator.

4. The system of claim 3, wherein said at least one internal, directly modulatable component is an oscillator, and wherein said difference frequency generator output signal comprises an "on" mode or an "off" mode, and wherein said oscillator is modulatable by keeping average power of said pump fiber laser constant while providing an oscillator signal having an amplified peak power above a difference frequency generator threshold for said "on" mode and below said difference frequency generator threshold for said "off" mode.

5. The system of claim 4, wherein said provided oscillator signal is obtained by modulating at least one of: pulse duration, peak power, repetition rate, or pulse shape of said oscillator signal.

6. The system of claim 3, wherein said at least one internal, directly modulatable component is an oscillator, and wherein said difference frequency generator output signal comprises a modified energy or repetition rate, and wherein said oscillator is modulatable by keeping average power of said pump fiber laser constant while providing an oscillator signal having a modulated pulse energy or a modulated repetition rate.

7. The system of claim 3, wherein said pump fiber laser is a MOPA fiber laser, and wherein said at least one internal, directly modulatable component is a power amplifier pump diode, and wherein said difference frequency generator produced output signal is obtained by modulating said power amplifier pump diode while keeping said pump signal constant prior to its entry into said power amplifier pump diode.

8. The system of claim 3, wherein said pump fiber laser is a MOPA fiber laser, and wherein said at least one internal, directly modulatable component is an amplifier pump diode, and wherein said difference frequency generator produced output signal is obtained by modulating said amplifier pump diode.

9. The system of claim 3, wherein said at least one internal, directly modulatable component is two or more of: a power amplifier pump diode, an amplifier pump diode, or an oscillator.

10. A method comprising:

generating a seed pump by a master oscillator;

providing a fiber laser comprising a string of amplifiers and an optical parametric oscillator (OPO) coupled to the fiber laser;

producing a pump signal by the fiber laser responsive to receiving said seed pulse and;

producing an output pulse train at the OPO in response to the pump signal, wherein the OPO is further configured to only convert pump signals with intensities above a predefined OPO threshold,

wherein an internal component of the fiber laser is used for modulating the pump signal, and

wherein the pump signal is used to modulate the OPO output pulse train.

11. The method of claim 10, wherein said providing a pump fiber laser comprises providing at least one of: an "all-fiber" fiber laser or a hybrid fiber laser.

12. The method of claim 10, wherein said modulating at least one internal, directly modulatable component comprises modulating at least one of: a power amplifier pump diode, an amplifier pump diode, or an oscillator.

13. The method of claim 12, wherein said modulating comprises modulating an oscillator, and wherein said difference frequency generator output signal comprises an "on" mode or an "off" mode, and wherein said modulating is done by keeping average power of said pump fiber laser constant while providing an oscillator signal having an amplified peak power above a difference frequency generator threshold for said "on" mode and below said difference frequency generator threshold for said "off" mode.

14. The method of claim 13, wherein said providing said oscillator signal is obtained by modulating at least one of: pulse duration, peak power, repetition rate, or pulse shape of said oscillator signal.

15. The method of claim 12, wherein said modulating comprises modulating an oscillator, and wherein said difference frequency generator output signal comprises a modified energy or repetition rate, and wherein said modulating said oscillator is done by keeping average power of said pump fiber laser constant while providing an oscillator signal having a modulated pulse energy or a modulated repetition rate.

16. The method of claim 12, wherein said pump fiber laser is a MOPA fiber laser, and wherein said modulating at least one internal, directly modulatable component comprises modulating a power amplifier pump diode, and wherein said difference frequency generator produced output signal is obtained by modulating said power amplifier pump diode while keeping said pump signal constant prior to its entry into said power amplifier pump diode.

17. The method of claim 12, wherein said pump fiber laser is a MOPA fiber laser, and wherein said modulating said at least one internal, directly modulatable component comprises modulating an amplifier pump diode.

18. The method of claim 12, wherein said modulating at least one internal, directly modulatable component comprises modulating two or more of: a power amplifier pump diode, an amplifier pump diode, or an oscillator.