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Potential within: topology optimization of the spine

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ABSTRACT

As scientists and engineers continually seek to optimize systems and structures, biology has become an increasingly popular source of inspiration. Many common algorithms for optimization are based on natural phenomenon; therefore, it is only logical to assume that many natural structures are already optimally designed. In fact, Wolff's law states that the trabecular structure of our own bones is a self-optimizing structure. This presentation explores that theory in relation to the vertebrae found in humans and animals alike.