

## Dynamical Phyllotaxis, Artificial Spin Ice, and Graphenic Bicontinuum



Cristiano Nisoli

### Dynamical Phyllotaxis, Artificial Spin Ice, and Graphenic Bicontinuum

A journey through leaves and stems, rotons  
and solitons, magnets and arrays, one  
ground state lost,  
many found and two fields



Filesize: 8.65 MB

### Reviews

*This ebook is fantastic. It is actually written in straightforward terms rather than hard to understand. Its been designed in an extremely straightforward way and it is merely soon after i finished reading through this ebook through which in fact modified me, alter the way i really believe.*  
*(Justice Wilderman)*

## DYNAMICAL PHYLLOTAXIS, ARTIFICIAL SPIN ICE, AND GRAPHENIC BICONTINUUM

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VDM Verlag Okt 2009, 2009. Taschenbuch. Book Condition: Neu. 220x150x6 mm. Neuware - Reflecting the somehow eclectic nature of the author's interests, this book explores three - if not more - separated topics, at the forefront of their fields. After demonstrating in an experimental magnetic cactus the same phyllotactic patterns that occur in leaves on a stem, spines on a cactus, or scales on a pine cone, Chapter I shows that the dynamics of phyllotaxis generates new physics beyond botany: rotons and a large family of dynamically stable novel topological solitons. This 'dynamical phyllotaxis' is likely to be relevant e.g. for conduction in Wigner crystals in cylindrical geometries, energy localization in protein alpha helices, or solitons in DNA. Chapter II reports on the first artificial realization at the nanoscale of spin ice, discusses its relationship with well known vertex models and shows how this athermal system can be described by an effective thermodynamics. Chapter III focuses our attention to carbon nanostructures and introduces a two-field formalism that can fully describe their electromechanical properties at small deformations, and therefore explains and extends a previously disparate accumulation of analytical and computational results. 92 pp. Englisch.



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