

Split Real Quantum Groups

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I will introduce the notion of positive representations as a new research program devoted to the representation theory of split real quantum groups, initiated in a joint work with Igor Frenkel. Many fundamental results are parallel to the finite dimensional representation theory of compact quantum groups, but at the same time also serves some new properties like the modular double that is not available in the compact case. This provides many new relations and applications to mathematical physics, Langlands duality, Teichmuller theory, TQFT, C^* -algebras and cluster algebras.