Fourier inversion formulas in option pricing and insurance

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Abstract: Several authors have used Fourier inversion to compute prices of puts and calls, some using Parseval's theorem. The expected value of max(S K,0) also arises in excess-of –loss of stop-loss insurance and we show that Fourier methods may be used to compute them. In this paper, we take the idea of using Parseval's theorem further: (1) formulas requiring weaker assumptions; (2) relationship with classical inversion theorems for probability distributions; (3) formulas for pay-offs which occur in insurance. Numerical examples are provided.