Froissart-Martin Bound: A CFT Perspective

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Abstract: We derive bounds analogous to the Froissart bound for the absorptive part of d-dimensional CFT Mellin amplitudes. Invoking the AdS/CFT correspondence, these amplitudes correspond to scattering in AdS_{d+1}. We can take a flat space limit of the corresponding bound. We find the standard Froissart-Martin bound, including the coefficient in front for $d+1=4$ being π/μ^2, μ being the mass of the lightest exchange. For $d>4$, the form is different. We show that while for $CFT_{d \leq 6}$, the number of subtractions needed to write a dispersion relation for the Mellin amplitude is equal to 2, for $CFT_{d>6}$ the number of subtractions needed is greater than 2 and goes to infinity as d goes to infinity.