

# Structures of a nonlinear elliptic equation with an $A_2$ weight and related topics

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**Abstract.** We consider a nonlinear elliptic equation of the form

$$\frac{1}{\xi(x)} \operatorname{div} (\xi(x) \nabla u) + V_1(|x|)u + V_2(|x|)u^p = 0 \quad \text{in } \mathbf{R}^N,$$

with positive  $\xi(x)$  satisfying the  $A_2$  weight condition and  $p > 1$ . Under the assumption that the linear part is a subcritical operator, we discuss structures of positive radial solutions and their asymptotic behavior. This talk is based on the joint project with Professors K. Ishige (Univ. Tokyo), E. Yanagida (Tokyo Inst. Tech.) and S. Yotsutani (Ryukoku Univ.).